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Syllabus MCA – Masters in Computer Application

COURSE STRUCTURE

YEARLY SCHEME OF EXAMINATION – PGDCA/MCA COURSE I YEAR

PAPER CODE	PAPER TITLE	EXAMINATION DURATION	MARKS	
			MAX.	MIN.
PGDCA/MCA-101	Fundamentals Of Computer	3 Hrs	100	35
PGDCA/MCA-102	Pc Software Packages	3 Hrs	100	35
PGDCA/MCA-103	Data Base Management System	3 Hrs	100	35
PGDCA/MCA-104	Programming In 'C' And Data Structure	3 Hrs	100	35
PGDCA/MCA-105	Operating System Principles	3 Hrs	100	35
PGDCA/MCA-106	Computer Networks & Internet Concept	3 Hrs	100	35
PGDCA/MCA-107	System Analysis & Design	3 Hrs	200	35
PGDCA/MCA-108	Object Oriented Programming Using C++	3 Hrs	200	35
PGDCA/MCA-109	Practical I : PC Software And DBMS	3 Hrs	200	35
PGDCA/MCA-110	Practical II : C & C++ Programming Lab.	3 Hrs	200	35

YEARLY SCHEME OF EXAMINATION – MCA COURSE II YEAR

PAPER CODE	PAPER TITLE	EXAMINATION DURATION	MARKS	
			MAX.	MIN.
MCA 201	Software Engineering	3 Hrs	100	35
MCA 202	Artificial Intelligence	3 Hrs	100	35
MCA 203	Discrete Mathematics	3 Hrs	100	35
MCA 204	Programming In Java	3 Hrs	100	35
MCA 205	Computer Graphics	3 Hrs	100	35
MCA 205	Web Technology	3 Hrs	100	35
MCA 206	Foundation Course In Accounting In Computing	3 Hrs	100	35
MCA 207	Computer Architecture	3 Hrs	100	35
MCA 208	Practical I : Programming In Java Lab.	3 Hrs	100	35
MCA 209	Practical II : Web Technology Lab	3 Hrs	100	35

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YEARLY SCHEME OF EXAMINATION – MCA COURSE III YEAR

PAPER CODE	PAPER TITLE	EXAMINATION DURATION	MARKS	
			MAX.	MIN.
MCA 301	.Net Framework (Programming In ASP.Net Using C#)	3 Hrs	100	35
MCA 302	Rdbms (Oracle)	3 Hrs	100	35
MCA 303	Data Mining	3 Hrs	100	35
MCA 304	Erp System	3 Hrs	100	35
MCA 305	Practical I : Asp.Net Lab	3 Hrs	200	35
MCA 306	Practical II : Oracle Lab	3 Hrs	200	35
MCA 307	Project	3 Hrs	200	35

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SYLLABUS 2013-14
PGDCA/MCA-I YEAR

Duration : 3Hrs. **PGDCA/MCA-101** **Marks (Max. 100, Min. 35)**

FUNDAMENTALS OF COMPUTER

Introduction to Computer: Introduction, Strengths of computers, Limitations of computers, Fundamental uses of computers, Development of computers, Types of Computers, Generations of Computers

Personal Computer: Introduction, Personal computer, Uses of personal computers, Components of personal computers, Evolution of PCs, Developments of processors, Architecture of pentium IV, Configuration of PC

Boolean Algebra and Logic Gates: Introduction, Boolean Algebra, Binary Valued Quantities, And Operator, OR Operator, NOT Operator, Basic Postulates of Boolean Algebra, Therorems of Boolean Algebra, De Morgan's Theorems, Reducing Boolean Expression by their Simplifications, Proving the Equations of Boolean Expressions By Truth Table, Principle of Duality, Standard Forms, Basic Logic Gates, Use of Logic Gates in Circuits, Karnaugh Maps

Number System: Introduction, Digital and Analog Operations, Binary Data, Binary Number System, Decimal Number System, Octal Number System, Hexadecimal Number System,Fractional Conversion, Coding System

Data Representation and Binary Arithmetic: Introduction, Bits, Nibbles, Bytes and Words, Data Representation, Coding system, Binary Arithmetic, Binary Addition, Binary Subtraction, Binary Multiplication, Binary Division, Character Representation, Checking the Result of Binary Arithmetic

Input Devices: Introduction, Input Device, Typing Input Devices, Pointing Input Devices, Scanning Input Devices, Audio Visual Input Devices

Output Devices: Introduction, Output Devices, Soft Copy Vs Hard Copy Output, Monitor, Printers, Plotter, Electrostatic Technique, Special Purpose Output Equipments

Central Processing Unit: Introduction, What is Central Processing Unit, Arithmetic And Logic Unit, Control Unit, Registers, Instruction set, Processor Speed

Storage Devices: Introduction, Storage and its needs, Brain Vs Memory, Storage Evaluation Units, Data Access Methods, Primary Storage, Secondary Storage, Hard Disk Operations, Floppy Disk Drives, Winchester Disk, Optical Disk, VCD, CD-R, CD-RW, DVD, Zip Drive, Flash Drives, Blu Ray Disk, Memory Card, Driving Naming Conventions In a PC

Basics of Software: Introduction, What Does Software Stand For ?, Needs of software, Types of software, Open Source Software, Integrated Development Environment

Operating: Introduction, Operating System, Why an Operating System, Functions of Operating System, The Booting Process, Types of Reboot, Booting From Different Operating System, Types of Operating System, Some Prominent Operating Systems

Disk Operating System: Introduction, , What is DOS? , Functions of DOS; Versions of DOS, DOS Commands, Important Internal Commands of DOS ,Important External Commands of DOS, Executable Vs Non-Executable Files In Dos , Summary, Exercise, Lab Work

Programming Languages: Introduction, Data, information And Knowledge, Characteristics of Information, Comparison between human language and Computer Language, What is a program?, What is a Programming language?, Programming development cycle Algorithm, Program Flowcharts, Pseudocode, Programming approaches Programming Paradigms, Types of Programming Language, Third Generation Language, Fourth Generation Language

Virus: Introduction, Virus, History, Mechanism of virus, How A Virus Spreads, How is virus named, A few Prominent Viruses, Types of Computer Virus, Related Concepts : Anti Virus Programs,Norton Anti - Virus (nav), Execution of NortonAnti-Virus

Communication and IT: Introduction, Computer Network,Communication Process,

Communication Types Transmission Media, Wireless Media, Communication Channels/Media, Modem, Characteristics of a Modem, Types of Modem

Networks: Introduction, Internet Vs Intranet, Types of Network, Topology, Types of Connectivity, Network Devices

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SYLLABUS 2013-14
PGDCA/MCA-I YEAR

Duration : 3Hrs. **PGDCA/MCA-102** **Marks (Max. 100, Min. 35)**

PC SOFTWARE PACKAGES

Office Packages-Office activities and their software requirement, word Processing, spreadsheet, presentation graphics, database, introduction and comparison of various office suites like MS office, Lotus Office, Star Office, Open Office etc.

MS Word Basics: Introduction to MS Office; Introduction to MSWord; Features & area of use. Working with MS Word.; Menus & Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates; Creating a New Document; Different Page Views and layouts; Applying various Text Enhancements; Working with – Styles, Text Attributes; Paragraph and Page Formatting; Text Editing using various features; Bullets, Numbering, Auto formatting, Printing & various print options

Advanced Features of MS-Word: Spell Check, Thesaurus, Find & Replace; Headers & Footers ; Inserting – Page Numbers, Pictures, Files, Auto texts, Symbols etc.; Working with Columns, Tabs & Indents; Creation & Working with Tables including conversion to and from text; Margins & Space management in Document; Adding References and Graphics; Mail Merge, Envelops & Mailing Labels.

MS Excel: Introduction and area of use; Working with MS Excel.; concepts of Workbook & Worksheets; Using Wizards; Various Data Types; Using different features with Data, Cell and Texts; Inserting, Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different Views of Worksheets; Column Freezing, Labels, Hiding, Splitting etc.; Using different features with Data and Text; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with various options.

MS PowerPoint: Introduction & area of use; Working with MS PowerPoint; Creating a New Presentation; Working with Presentation; Using Wizards; Slides & its different views; Inserting, Deleting and Copying of Slides; Working with Notes, Handouts, Columns & Lists; Adding Graphics, Sounds and Movies to a Slide; Working with PowerPoint Objects; Designing & Presentation of a Slide Show; Printing Presentations, Notes, Handouts with print options.

Outlook express: Setup email account with outlook, sending and receiving mail through outlook, concepts of CC and BCC, forwarding mail, Draft messages, formatting e-mail message, Concept of MIME, Protocol, attaching files and items into messages, inserting hyperlink using outlook editor creating and using send and receive groupemails, opening received messages, opening messages with attachment, replying to mail forwarding messages flagging for further action, setting email options, managing contacts with outlook, Setting up multiple email accounts on single machine.

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SYLLABUS 2013-14
PGDCA/MCA-I YEAR

Duration : 3Hrs. **PGDCA/MCA-103** **Marks (Max. 100, Min. 35)**

DATA BASE MANAGEMENT SYSTEM

Introduction To DBMS: Operational Data, Introduction to database, Views of data, Three-Level Architecture proposal, Instances and Schemas, Purpose of database system, Advantages of DBMS, Disadvantages of DBMS, Structure of a DBMS, Data Models, Database Languages

E-R Model: Entity-Relationship Model, Entity and Entity set, Attributes and Keys, Relationship and relationship set, Mapping constraints, Entity-Relationship diagram, Strong and Weak entities, Generalization, Specialization, Aggregation, Reducing ER diagram to tables

RDBMS Concept And Terminology: Set theory - concepts and fundamentals, Extension and Intention, Attributes and Domains, Relations, Tuple, Concepts of keys, Fundamental integrity rules

Normalization: Functional dependencies, Universal Relation, Anomalies in a database, Decomposition, Normalization

Relational Algebra: Select Operation, Project Operation, Join Operation, Division Operation, Cross Product Operation, Set operations, Set operations

Relational Calculus: Introduction, Tuple Relational Calculus, Operators used in TRC, Example queries using TRC, Domain Relational Calculus, Operators used in DRC, Example queries using DRC, Comparison of TRC, DRC, RA

Database Language: Integrity Constraints: entity integrity, referential integrity, Keys constraints, Domain Constraints, **Introduction to SQL:** Characteristics of SQL, Advantage of SQL, SQL Data types and literals, Types of SQL Commands, SQL operators and their procedure, Tables, views and Indexes, Queries and Sub Queries, Aggregate functions, Insert, Update and delete operations, Joins, Unions, Intersections, Minus, Cursors in SQL

Database Administration: DBA - Role, Functionality and Importance, Failure classification, The storage hierarchy, RAID, Transaction model, File structure and Storage access, File organization, Organization of records in file, Data dictionary storage

Advanced DBMS: Database system Architectures, Centralized System, Client-Server System, Parallel Database System, Distributed Database System, Overview of Database on Web, Concepts of ODBC, DSN

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SYLLABUS 2013-14
PGDCA/MCA-I YEAR

Duration : 3Hrs. **PGDCA/MCA-104** **Marks (Max. 100, Min. 35)**

PROGRAMMING IN 'C' AND DATA STRUCTURE

Introduction to C: Introduction, Character set (Alphabets of C), C Tokens, Keywords, Identifiers, Constants, Basic/Simple/Primitive Data types, Declaration of variables, Operators, Statements,
Decision Making and Branching: Introduction, Sequential statements, Unformatted I/O functions, Formatted input using scanf() function Formatted output using print(), Branching statements, The if-else statement, The nested if-statement The switch statement, Additional programs
Looping Statements: Introduction, for-statement, while-statement, do-while statement, Difference between while-loop and do-while loop, Nested loops, Jumps in loops, Programming examples
Arrays: Introduction, Single-dimensional arrays, Reading and writing single dimensional arrays, Examples of Complex Programs, Searching, Sorting, Two-dimensional arrays (Multi-dimensional arrays), Reading-writing two-dimensional arrays, Manipulation in two-dimensional arrays, Programming Examples, **Strings**- Introduction, String Concepts, String variable, String input/output functions, Arrays of strings, String handling functions
User Defined Functions: Introduction, Elements of user-defined functions, Categories of functions, Passing parameters to functions, Programming Examples, Arrays in functions, Nesting of Functions, Recursion, Command Line Arguments, Storage Classes
Pointers: Introduction, Pointer concepts, Pointer variable, Accessing variables through pointers, Pointer declaration and Definition, Initializing a pointer variable, Pointers to Pointers, Compatibility, Pointer applications, Pointers and other operators, Memory allocation functions, Memory map of C program, Memory management functions
Structure and Union: Introduction to structures, Structure and its definition, Structure declaration, Tagged Structure, Structure variables, Type-Defined Structure, Structure initialization, Accessing structures, Nested structures, Array of structures, Structures and functions, Sending individual members, Sending the whole structure, Passing structures through pointers, Uses of structures, Union and its definition, Difference between structures and arrays, Pointer to structures, Complex structures
Derived Data Types: Enumerated, Introduction, Enumerated data types
File Handling: Introduction to file handling, File system basics, Standard streams in C, File structure, FILE pointer, Opening and closing a file, File handling functions, File types, Text and Binary, Input / Output operations on file, Reading a character using getc(), Writing a character using putc(), Using feof(), Working with string using fputs() and fgets(), Using fprintf() and fscanf(), Using fread() and fwrite(), Direct Access file, fseek()
Analysis of Algorithm: Introduction, Criteria of Algorithm, Time Complexity, Space Complexity, Asymptotic Notation, Big Oh (O) Notation, Big Omega (?) Notation, Big Theta (?) Notation
Linked Lists: Concept of list and array, Introduction to Data Structures, Arrays, Linked list, Singly or Linear linked list, Circular singly linked list, Doubly linked lists, Header Node, pplications of linked lists, Addition of two long positive numbers, Evaluation of a polynomial
Stacks: Introduction, Push operation, Pop operation, Stack implementation using arrays (static implementation of stacks), STACK as a Linked List, Stack as an abstract data structure, Applications of stack, Conversion of Expressions, Precedence and associativity of the operators, Evaluation of Postfix expression, Multiple stacks
Recursion: Introduction, Working of recursion, Fibonacci series, Tower of Hanoi, Efficiency of recursion, **Queue:** Introduction , Different types of queues, Queue (Linear queue), Queue as an abstract data structure, Circular queue, Double ended queue (Dequeue), Priority queue, QUEUE as a Linked List, Applications of Queue,
Trees: Introduction, Representation of tree, Binary Tree , Representation of binary tree, Array representation of binary tree, Linked List representation of binary tree, Basic Operation on Binary Tree- Traversals, Binary Tree Traversal Algorithms, (Recursive), Creation of Binary Search Tree, Types of binary trees, Operations on Binary Search Tree (BST), Threaded binary trees, Application of Binary Tree, B-Tree, Height Balanced Tree
Graph: Introduction to Graphs, Undirected Graph, Directed Graph or digraph, Graph Representation, Adjacency Matrix Representation, Adjacency List Representation,

Graph Traversals, Breadth First Traversal, Depth First Traversal
Sorting and Searching: Introduction, Bubble sort, Selection Sort, Merge Sort, Quick sort, Insertion Sort, Shell sort, Address calculation sort, Radix sort, Comparison of sorting methods, Hash Table, Collision Resolution Techniques, Linear Search (Sequential Search), Binary Search, Searching an ordered table, Indexed sequential search, Interpolation search

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PGDCA/MCA-I YEAR

Duration : 3Hrs. **PGDCA/MCA-105** **Marks (Max. 100, Min. 35)**

OPERATING SYSTEM PRINCIPLES

Operating System: Introduction of Operating System, Types of Operating System, System Components and it's services, System Calls, System Programs, Structure, Design and , Implementation, Operating System Generation

Process: Concept, Description and Control, Concept of process, Process state model, Process description – PCB, Process control, Threads, Threads in Linux

Process Scheduling: Types of Scheduler, Scheduling Criteria, Uniprocessor Scheduling, Multiprocessor Scheduling, Algorithm Evaluation, Process Scheduling in Linux

Process Synchronization and Deadlocks: The Critical-Section problem, synchronization hardware, Semaphores, Classical problems of synchronization, Critical Regions, Monitors, Deadlocks-System Model, Characterization, Deadlock prevention, Avoidance and Detection, Recovery from deadlocks, Combined approach to deadlock handling.

Security and Protection: Protection and Security-Goals of Protection, Domain of Protection, Access Matrix, Implementation of Access Matrix, Revocation of access rights, Language Based Protection, The Security Problem. Authentication, One Time passwords, Program threats, System threats, threats monitoring, Encryption

Memory Management: Memory Management Requirements, Address Space, Linking and Loading, Swapping, Partitioning, Paging, Segmentation

Virtual Memory: Introduction to Virtual Memory, Demand Paging, Page Replacement, Thrashing, Demand Segmentation, Solved Problems

Input Output Systems: Input - Output Devices, Hardware Support for I/o, I/O Communication Techniques, I/O Software Device Drivers, Performance Consideration

Disk Structure: Introduction to Disks, Disk Scheduling, Disk Management, Disk Reliability, Swap Space Management, Stable Storage Implementation, Solved Problems

File Management: File Concepts, Directory structure, File Sharing, Protection, File system in Linux.

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SYLLABUS 2013-14
PGDCA/MCA-I YEAR

Duration : 3Hrs. **PGDCA/MCA-106** **Marks (Max. 100, Min. 35)**

COMPUTER NETWORKS & INTERNET CONCEPT

Introduction to Networking: Introduction to Network, Network, Computer Networks, Need of Network , Uses of Computer Network, Applications of networks, Network Criteria, Network Hardware and Software, network types : client, server & peers, Various Types of Servers

Transmission Technology: Transmission technology, Data can be analog or digital, Analog and Digital Transmission, Asynchronous & synchronous transmission, Types of Communication Modes, Base Band and Broadband Transmission, Comparison of Base band and Broadband Signaling

OSI Model: Open System Interconnection model (OSI), Layered Architecture of the OSI, Reference Model, Functions of the ISO/OSI Layers, Summary of OSI Layer functions

Real World Networks: Ethernet,Fast Ethernet, FDDI (Fiber Distributed Data Interface), Network Operation, ATM (Asynchronous Transfer Mode), ATM Service Categories, ARCNET, AppleTalk

IEEE 802 Standards: An Introduction, IEEE 802 standards, IEEE 802.3 (CSMA/CD), IEEE 802.4 (Token Bus), IEEE 802.5 [Token Ring], IEEE 802.5 cable standards, Comparison between IEEE 802.3,802.4 and 802.5, Compare Token Passing with CSMA/CD

TCP/IP Reference Model: Overview of TCP/IP, reference model, Introduction to TCP/IP, TCP/IP Protocols, User Datagram Protocol, The Internet Control Message Protocol (ICMP), The Address resolution Protocol (ARP), Reverse Address Resolution Protocol (RARP), Simple Mail Transfer Protocol (SMTP), File Transfer Protocol, Dynamic Host Configuration Protocol (DHCP), Remote Login (rlogin), The Network File System (NFS)

IP Addressing & Subnet: Introduction to IP, Domain Name System (DNS), URL (Uniform Resource Locator), Electronic Mail, E-mail address, Subnet & Subnet masks

Network Security: Concept, The Need for Security, common threats, security barriers in network pathways, Attacks, Classification of Attacks, Specific Attacks, Approaches to Network Security, Levels of Security, Approaches to network security, Security Services

Viruses & Security Threats: Virus & Threats, Malicious Programs, Types of Viruses, Virus Countermeasures, Antivirus Approach, Advanced Antivirus Techniques, Distributed Denial of Service Attacks, DDoS Attack Description

Firewalls: Firewalls, Firewall Design Principles, Types of Firewalls, Firewall Configurations, Demilitarized Zone (DMZ) Networks, VLAN

Encryption & Decryption: Encryption & Decryption – Cryptography, Terminology, Classification of Cryptography, Substitution Ciphers, Security of algorithms, Steganography, Steganography vs Cryptography, Public key encryption, Comparison of Symmetric and Asymmetric Key Cryptography ,Public Key Cryptanalysis

Digital Signature: Digital Signature, Requirements of Digital Signature, Direct Digital Signature, Arbitrated Digital Signature, Authentication Protocols, Symmetric Encryption Approach, Public-Key Encryption Approach, Digital Signature Standard, RSA and Digital Signature, DSS Approach, The Digital Signature Algorithm

Applications of Computers and Information Technology: Introduction, Business And Computer, E-Mail, E-Commerce, Project management, Computers in Personnel Administration, Accounting, Computers in Cost and Budget Control, Marketing, Manufacturing, Materials management, Banking, Insurance And Stock broking, Purchasing, Computers in warehousing.

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SYLLABUS 2013-14
PGDCA/MCA-I YEAR

Duration : 3Hrs. **PGDCA/MCA-107** **Marks (Max. 100, Min. 35)**

SYSTEM ANALYSIS & DESIGN

System Concept and System Environment: Introduction, Concept of System, Characteristics of A System, Elements of A System, System Environment And Boundary, Types of a System, Management Information System, Decision Support system, ERP System

System Development Life Cycle: Introduction, System development Life cycle, Different Phases of System Development Life Cycle, Considerations for candidate systems, political consideration, prototyping

Role of System Analyst: Introduction, Historical perspective of system analyst, Who Are Called Systems Analyst ?, What does a system analyst do ?, Who can be a system analyst ?, System analysis and designing skills, Personal qualification, Educational background and work experience, Career prospects in system analysis

System Planning and Initial Investigation: Introduction, System Planning, Why System Planning ?, Strategic MIS Planning, Managerial and Operational MIS Planning, Determining the User's Requirements, Strategies for Determining Information Requirements, Getting Information from the Existing Information System, Prototyping, Initial Investigation

Information Gathering: Introduction, Nature of Information, Sources of Information, Information Gathering Technique, Samples of Existing Documents, Forms and Databases, Research and Site Inspection, Site Observation, Questionnaires, Interviews, Types of Interviews, Conducting an Interview

Structured Analysis: Introduction, What is Structured Analysis ?, Why Structured Analysis ?, Charts, Bar Charts, Line Chart, Pie Charts, Data Flow Diagram, Guidelines for Drawing Data Flow Diagrams, Logical and Physical Data Flow Diagrams, Data Dictionary, Data Dictionary Definition and Entries, Decision Trees, Structured English

Feasibility Study: Introduction, Why Feasibility Study ?, Steps In Feasibility Study, Forming the System Team, Reviewing the System Data Flow Diagrams, Developing the System Candidates, Evaluating Preliminary Evaluation of Candidates, Preparing Detailed Description of Candidates, Identifying Meaningful System, Characteristics, Determining Performance and Cost for Each Candidate, Weighing the System Performance and Cost Characteristics, Feasibility Tests, Feasibility Reports

Cost/Benefit Analysis: Introduction, Data Analysis, Classifications of Costs and Benefits, Tangible or Intangible Costs and Benefits, Direct or Indirect Costs and Benefits, Fixed or Variable Costs and Benefits, Cost Categories, Determining Costs/Benefits, System Proposal

System Design: Introduction, Design Process, Phases of Design, Methodologies of Designing, Structured Design, Functional Decomposition, Module Coupling and Cohesion, Prototyping, Information Engineering, Joint Application Development, Rapid Application Development, Object Oriented Design, Development Activities, Audit Considerations, Processing Controls and Data, Validation, Audit Trial and Documentation control

Input, Output and Form Design: Introduction, Input Design, Input Design Considerations, Input Devices, Output Design, VDT Screen Output, Graphics, Desktop Publishing, Basic Parts of a Form, Form Design, Types of Forms, Layout Considerations, Print Forms in Reasonable Quantities, Automated Form Design, Forms Control

Hardware/Software Selection and the Computer Contract: Introduction, Supplier and Types, Software Industry, Procedure for Hardware/Software Selection, Role of Consultant, Post Installation Review, Software Selection, Ownership, Financial Consideration in Selection, Used Computer, Computer Contract, Art of Negotiation, Responsibilities and Remedies, Hardware, Software, Delivery and Acceptance, Warranties, Finance, Guarantee fo Reliability

System Security and Disaster Recovery Planning: Introduction, System Security, System Security is an Important Concern, Threats to System Security, Personal Computer and System Integrity, Risk Analysis, Control Measures, Recovery/Restart Requirements, System Failures and Recovery, Disaster/Recovery Planning, Plans, Team, Planning Task, Ethics in System Development, Ethics Codes and Standards of Behaviour

Electronic Data Processing: Introduction, Data, Data Vs Information, Characteristics of Useful information, Data Processing, Need for Data Processing, Types of Data Processing, Data Management, Data Organization, Database Management Systems, Disadvantages of Database Approach, Data Warehousing, Future Trends, Data Verification, Data Validation, EDP Organization, Data Center, Evolution of Data Center, Requirements for Modern Data, Centers, Applications of Data Centers

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PGDCA/MCA-I YEAR

Duration : 3Hrs. **PGDCA/MCA-108** **Marks (Max. 100, Min. 35)**

OBJECT ORIENTED PROGRAMMING USING C++

Overview of C++: Software crisis, Object oriented programming paradigm, Basic concepts of oop, Advantages/Benefits of oop, Usage/applications of OOP

C++ Environment: Program development environment, The language and the c++ language standards, Tntroduction to various c++ compilers, The c++ standard library, Prototype of main() function, i/o operator, manipulator, comments, data types

Creating and Compiling C++ Programs: TURBO C++ IDE, Creating, compiling and running a c++ program using ide and through command line, Elements of C++ Language, Structure of a c++ program, C++ tokens, Type conversion in expressions

Decision Making and Branching: Introduction, Sequential statements, Mathematical Functions, Branching statements, Looping Statements, Nested loops, Programming examples

Arrays and Functions: Arrays, The meaning of an array, Single-dimensional arrays, Two-dimensional arrays (Multi-dimensional arrays), User Defined Functions, Elements of user-defined functions, Return values and their types, Function calls, Categories of functions, Passing parameters to functions, Recursion, Command Line Arguments, Storage Class Specifiers

Classes and Objects: Classes, Structures and classes, Unions and classes, Friend function, Friend classes, Inline function, Scope resolution operator, Static class members, Static data members, Static member functions, Passing object to functions, Returning objects, Object assignment

Array, Pointers, References and the Dynamic Allocation Operators: Array of objects, Pointer to object, Type checking in C++, The this pointer, Pointer to Derived Types, Pointer to class members, References, C++'s Dynamic Allocation Operators

Constructors and Destructors: Introduction, Constructors, Default Constructor, Parameterized constructors, Copy Constructors, Multiple Constructors in a class, Constructors with default arguments, Default Arguments, Special Characteristics of Constructor functions, Destructors

Function and Operator Overloading: Function overloading, Overloading Constructor Function, Finding the address of an overloaded function, Operator Overloading, Creating a Member Operator Function, Creating Prefix and Postfix forms of the increment (++) and decrement (– –) operators (Overloading Unary Operator), Overloading the ShorthandOperators (i.e. +=, == etc), Operator Overloading Restriction (Rules) , Operator Overloading using friend function , Overloading new and delete operator , Overloading some special operators , Overloading [ ] (Subscripting) operator , Overloading() (Function Call) operator, Overloading Binary Arithmetic operators, Concatenating String, Overloading Comma (,) operator, Overloading the I/O operators

Inheritance: Introduction to inheritance, Features or Advantages of Inheritance, Type of Inheritance, Base Classes and Derived Classes, Base Class Access Control, Protected Members, Protected Base class Inheritance, Inheriting Multiple Base Classes, Constructors, Destructors and Inheritance, Passing Parameters to Base Class Constructors, Granting Access, Virtual Base Classes

Polymorphism: Polymorphism, Types of Polymorphism , Virtual Functions and Polymorphism, Pure Virtual Functions, Early Vs Late Binding

The C++ I/O System Basics: The C++ I/O System basics, C++ predefined streams, Formatting using the ios members, Clearing Format Flags , An Overloaded form of setf( ), Examining the Formatted Flags, Using width( ), Using precision( ), Using fill( ) , Using Manipulators to format I/O, Creating your own Manipulators

SYLLABUS 2013-14
PGDCA/MCA-I YEAR

Duration : 3Hrs. **PGDCA/MCA-109 & 110** **Marks (Max. 100, Min. 35)**

PRACTICAL I : PC SOFTWARE AND DBMS

Based on MCA 102 & MCA 103

PRACTICAL II : C & C++ PROGRAMMING LAB.

Based on MCA 104 & MCA 108

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SYLLABUS 2013-14
MCA-II YEAR

Duration : 3Hrs. **MCA-201** **Marks (Max. 100, Min. 35)**

SOFTWARE ENGINEERING

Software engineering: introduction, reusable software components, what is well engineered software ?, programming and software, engineering, what is software engineering goals of software engineering, software processes, software process models, process iteration, other important software models

Software project management:project management, management activities, project planning, project scheduling, risk management, selecting staff,metrics used for measuring the software cost, cocomo model

Software process and project metrics:software quality, metrics for the analysis model, metrics for the design model, metrics for source code, metrics for testing

Software project planning:introduction, software project planning, other palnning activities, organisation of the software project, management plan (spmp) document

Software cost estimation:introduction, software cost factors, programmer's ability, product complexity, product size, required level of reliability, level of technology, decomposition technique, empirical estimation models, the structure of estimation models

Software project requirements:software requirements, functional and non-functional, requirements, user requirements, system requirements, software requirements document

Requirements engineering process:requirements engineering process, feasibility study, requirements elicitation and analysis, scenarios, requirements specification, ethnography, requirements validation, requirements management

Software prototyping:software prototyping, prototyping in the software process, rapid prototyping techniques, user interface prototyping

Analysis concept and modeling:analysis modeling, context model, data modeling concepts, cardinality and modality, flow oriented diagram, data dictionary

Design concepts and principles:introduction, design within the context of software, engineering , design process and design quality, design concepts, information hiding, functional independence, design classes, the design model, software patterns

Software architecture:software architecture, data design, architectural styles and patterns, analyzing alternative architectural designs, mapping the requirements into a software architecture, architectural design

Designing the user interface:user interface, input design, end-user considerations for input design, output design, design principles, screens, forms, menu, messages, importance of code, data codification schemes, designing code less systems

Softwarequality management:software quality management, role of a software quality manager, iso quality model, quality assurance standards, quality planning, quality control, software reviews, software reliability

Verification and validation:verification and validation, software testing, verification and validation planning, software inspections, automated static analysis, cleanroom software development

Software testing models: software testing fundamentals ,black-box and white-box testing, white-box testing, basis path testing, control structure testing, black-box testing, object-oriented testing methods

Software testing strategies:the strategic approach, the software testing strategy, strategic issues, unit testing, integration testing, validation testing, system testing, test automation

Computer aided software engineering (case):computer aided software, engineering (case), case workbenches, integrating case environment, need of software reuse:, types of reuse, reuse process.

SYLLABUS 2013-14
MCA-II YEAR

Duration : 3Hrs. **MCA-202** **Marks (Max. 100, Min. 35)**

ARTIFICIAL INTELLIGENCE

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 System,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

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

Handling uncertainty Non-Monotonic Reasoning, Probabilistic reasoning, use of certainty factors, fuzzy logic. Learning Concept of learning, learning automation, genetic algorithm, learning by inductions, neural nets.

Expert System need and justification for expert systems, knowledge acquisition, Case studies: MYCIN, RI

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SYLLABUS 2013-14
MCA-II YEAR

Duration : 3Hrs. **MCA-203** **Marks (Max. 100, Min. 35)**

DISCRETE MATHEMATICS

Sets and propositions: Combination, finite, uncountably infinite and infinite sets, mathematical induction, principles of inclusion and exclusion, propositions

Permutations, combinations, discrete probabilities: Rules of sums and products, permutations, combinations, generation, discrete probability, conditional probability, information.

Relations and functions: Relational model of databases, properties of binary relations, equivalence relation, partitions, partial ordering, lattices, chains and antichains, functions and pigeon-hole principle

Graphs: Basic terminology, multi- and weighted graphs, paths, circuits, shortest path, Eulerian path, Traveling Salesman problem, factors of a graph, planar graphs.

Trees: Trees, rooted trees, path length, prefix codes, binary search trees, spanning trees and cut-sets, minimum spanning trees, transport networks.

Finite-state machines: FSM as models of physical systems, equivalent machines, FSM as language recognizer.

Computability and Formal languages: Russel's paradox and non-computability, ordered sets, languages, phrase- structured grammars, types of grammars and languages.

Recurrence relations: Linear recurrence relations with constant coefficient, homogeneous, particular and total solutions, generating functions, sorting algorithms, matrix multiplication.

Discrete numerical functions: Manipulations of numerical functions, asymptotic behavior, generating, functions, combinatorial problems.

Group: Groups and sub-groups, generators, evaluation of powers, cosets, Lagrange's theorem, permutation group and Burnsides theorem, group, codes, isomorphism, automorphism, homomorphism, normal subgroups, rings, integral domains and fields, ring homomorphism, polynomial rings and cyclic codes.

Lattices and Boolean algebras: Lattices and algebraic systems, principle of duality, properties of algebraic systems, distributive lattices, uniqueness, propositional calculus.

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SYLLABUS 2013-14
MCA-II YEAR

Duration : 3Hrs. **MCA-204** **Marks (Max. 100, Min. 35)**

PROGRAMMING IN JAVA

Overview Of Java: Introduction, Programming paradigm, OOPS Concepts, Evolution of Java, Features of Java, C++ Vs Java, Java and Internet, Java and WWW, Java support systems, Java Environment

Key Features Of Java: Introduction, Java Program Structure, Simple Java Program, Tokens, Java Statements, Java Virtual Machine, Constants and Variables, Declaration of Variables, Scope of Variables, Data types, Symbolic Constants, Type Casting, Command line arguments

Operators: Operators, Arithmetic Operators, Relational Operators, Logical Operators, Bitwise Operators, Increment and Decrement, Conditional Operators, Special Operators, Assignment Operators, Expression & its evaluation

Control Statements: Introduction, Control Statements, Sequence Control Statement, Decision Control Statement, Case Control Statement, Iteration Control Statement, Jump in loops, Labelled Loops

Arrays And Strings: Introduction, ARRAY , Need of Array, Types of Array, One dimensional Array, Two-Dimensional Array, Multidimensional Array, Strings , Concatenation of Strings, Methods for String Comparison, Methods for searching Strings, Changing the case of characters, String Buffer

Classes: Introduction, Defining a Class, Adding Variables, Adding Methods, Creating Objects, Accessing Class members, Call by value and call by reference, Recursion, Access Contro, Constructors, Method overLoading, Constructor Overloading, Garbage Collection, finalize( ) method, this keyword, Static Members, Nesting of Methods

Inheritance: Inheritance, Single Inheritance, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Using Super, Constructor -Order of Execution in Inheritance, Overriding methods, Final variables and methods, Final Classes, Abstract methods and Classes, Containership, Visibility Control

Wrapper Classes And Vectors: Introduction, Wrapper Classes, Number Class, Byte class, Short class, Integer class, Long class, Converting Numbers to and from Strings, Float class, Double class, Character class, Boolean class, Vectors, Creating a vector

Interface & Packages: Introduction, Interfaces, Defining interface, Implementing interface, Accessing interface method, Accessing interface variable, Extending interfaces, Packages, System packages, Using system packages, User defined packages, Adding class to a package, Accessing and using package

Exception Handling: Introduction, Exceptions, Using try & catch, Multiple catch clauses, Finally, Throw, Throws

Multithreading: Introduction, The Main Thread, Creating Threads, Life cycle of Thread, Using Threads Methods, Thread Priorities, Stopping and Blocking a thread, Thread Exceptions, Using is Alive( ) and join( ), Synchronization

Applets: Introduction, Local & remote applets, Applet vs applications, Writing applets, Life cycle of an applet, Creating source code of applet, Creating an executable applet, Creating applet tag, Adding applet tag to html, Running the applet, Detailed form of applet tag, Passing parameters to applet, Aligning the display, Html tags, Getting input from user

Input-Output Streams And File Management: Introduction, Stream, Stream Classes,

Byte Stream Classes, Character Stream Classes, System Class, Reading Console Input, Writing Console Output, Using the File Class, Random Access File

Graphics Programming: Introduction, The Graphics Class, Drawing Lines and Rectangles, Using draw Oval() and fill Oval() method, Drawing arcs, Drawing Polygon,Line Graphs, Drawing Bar Charts

SYLLABUS 2013-14
MCA-II YEAR

Duration : 3Hrs. **MCA-205** **Marks (Max. 100, Min. 35)**

COMPUTER GRAPHICS

Introduction to Computer Graphics: Introduction, Advantages of Computer Graphics, Applications of Computer Graphics, Classification of Computer Graphics, Graphics Standards, GRAPHICAL USER INTERFACE, Basic Elements of graphics

Graphical Input Devices: Introduction, Keyboard, Mouse, Trackball, Trackpads, Touch Screens/panels, Automatic Teller Machine, Joystick, Light Pen, Data Glove, image scanners, Digitizers/digitizing or graphic tablets

Graphical Output Devices: Introduction, hard copy and soft copy output devices, graphical Display or soft copy Devices, Monitor, Raster Scan and Random scan displays, Display technologies, Cathode Ray Tube (CRT) Displays, Flat Panel Displays, Characteristics OF A Monitor, video/Display Adapters, Modes, HARD COPY DEVICES

Drawing Geometry: Line & Circle Generation - Introduction, Lines, Line Segments, Vectors, Vector Generation, Thick Lines, Basic Concepts in Circle Drawing, Circle Drawing Algorithms, Ellipse Drawing Algorithm,

Aliasing, Anti-aliasing and Character Generation: Aliasing and Antialiasing, Character Generation, Normalized Device Co-ordinates, Display of Frame Buffer,

Polygon Representation and Filling: Introduction, Types of Polygons, Representation of Polygons, Entering Polygons, An Inside Test, Polygon Filling, Filling with Patterns, Scan Conversion,

2D Geometric Transformation: Introduction, Matrices, Transformations, Homogeneous Co-ordinates, Composition of 2D Transformations, Other Transformations,

2D Viewing Transformation and Clipping: Introduction, Viewing Transformation, More about Viewport and Window, Two-Dimensional Viewing Functions, Clipping, Cohen-Sutherland Subdivision Line Clipping Algorithm, Midpoint Subdivision Algorithm, Polygon Clipping, Sutherland - Hodgeman Polygon Clipping Algorithm,

3D Geometric Transformation: Introduction, 3D Geometry, 3D Primitives, Techniques to Achieve Realism, 3D Geometric transformations, Reflection with Respect to Given Plane, Reflection with Respect to Any Plane,

3D Display Methods: Three Dimensional Viewing, Viewing Parameters, Transformation from World co-ordinate to, Viewing co-ordinates, Projections, 3D Clipping, 3D Midpoint Subdivision Algorithm,

Segments: Introduction, Segment Table, Functions for Segmenting the Display File, More about Segments, Image Transformation, Raster Techniques, Animation using Segmentation,

Curve Generation: Introduction, Curve Generation, Interpolation, Interpolating Polygons, Spline Representation, Bezier Curves, B-Spline Curves, hidden surface, Back face Removal Algorithm, Z-Buffer Algorithm, Scan Line Algorithm,Painter's Algorithm (Depth Sort Algorithm).

SYLLABUS 2013-14
MCA-II YEAR

Duration : 3Hrs. **MCA-206** **Marks (Max. 100, Min. 35)**

WEB TECHNOLOGY

UNIT I

Introduction : History of the Internet and World Wide Web – HTML 4 protocols – HTTP, SMTP, POP3, MIME, IMAP. Introduction to JAVA Scripts – Object Based Scripting for the web. Structures – Functions – Arrays – Objects.

UNIT II

Dynamic HTML : Introduction – Object refers, Collectors all and Children. Dynamic style, Dynamic position, frames, navigator, Event Model – On check – On load – Onenor – Mouse rel – Form process – Event Bubblers – Filters – Transport with the Filter – Creating Images – Adding shadows – Creating Gradients – Creating Motion with Blur – Data Binding – Simple Data Binding – Moving with a record set – Sorting table data – Binding of an Image and table.

UNIT- III

Multimedia : Audio and video speech synthesis and recognition - Electronic Commerce – E-Business Model – E- Marketing – Online Payments and Security – Web Servers – HTTP request types – System Architecture – Client Side Scripting and Server side Scripting – Accessing Web servers – IIS – Apache web server.

UNIT -IV

DATABASE- ASP – XML Database, Relational Database model – Overview, SQL– ASP – Working of ASP – Objects – File System Objects – Session tracking and cookies – ADO – Access a Database from ASP – Server side Active-X Components – Web Resources – XML – Structure in Data – Name spaces – DTD – Vocabularies – DOM methods.

UNIT- V

Servlets & JSP : Introduction – Servlet Overview Architecture – Handling HTTP Request – Get and post request – redirecting request – multi-tier applications – JSP – Overview – Objects – scripting – Standard Actions – Directives. Brief survey of Web 2.0 technologies, introduction to Semantic web and other current technologies

SYLLABUS 2013-14
MCA-II YEAR

Duration : 3Hrs. **MCA-207** **Marks (Max. 100, Min. 35)**

FOUNDATION COURSE IN ACCOUNTING IN COMPUTING

UNIT – I

Basic Book Keeping and Accountancy: Definition and its usefulness, Financial Accounting: Principles, Concepts and Conventions

UNIT – II

System of BookKeeping: Double Entry System, Books of Prime Entry, Subsidiary Books, recording of Cash and bank Transactions, Preparations of Ledger Accounts, Preparations of Trial balance.

UNIT – III

Bank Reconciliation Statements: Need for Reconciliation between cash book and Pass Book, Problems relating to the preparation of Bank Reconciliation Statement

Depreciation Accounting: Straight Line and Diminishing balance Method, Computation and accounting treatment of Depreciation, changes in Depreciation Method.

UNIT – IV

Final Accounts: Concepts of Capitals, Revenue and Deferred Revenue Expenditure, Opening entries, Closing entries, Adjustment entries, Manufacturing, Trading and Profit and Loss Account (with adjustment) and Balance Sheet.

UNIT – V

Computerized Accounting: Use of Accounting Software Tally, Creation of Company, Voucher Entry, Analysis of Trial Balance and Final Accounts.

SYLLABUS 2013-14
MCA-II YEAR

Duration : 3Hrs. **MCA-208** **Marks (Max. 100, Min. 35)**

COMPUTER ARCHITECTURE

Representation of Information and Basic Building Blocks: Digital computers, computer architecture, computer organization, difference between computer architecture and computer organization, Introduction to computer, Character Codes (BCD, ASCII, EBCDIC), Gray Code, Excess-3 & BCD, Error Detection & Correcting Codes, K-map simplification, Half Adder, Full Adder, Subtractor, Decoder, Encoder, Multiplexer, Demultiplexer, Carry look ahead adder, Combinational logic Design, Flip-Flops, Registers, Counters (synchronous & asynchronous), Faster Algorithm and Implementation (multiplication & division)

Basic Organisation: Von neuman Machine (IAS Computer), Operational flow chart (Fetch, Execute), Instruction Cycle, Organisation of Central Processing Unit, Hardwired & micro programmed control unit, Single organization, General Registration Organisation, Stack Organisation, Addressing modes, Instruction formats, data transfer & Manipulation, I/O organization, Bus Architecture, Programming Registers.

Memory Organisation: Memory Hierarchy, main Memory (RAM/ROM chips), Auxilary memory, Associative memory, Cache Memory, Virtual Memory, Memory Management hardware, hit/miss ratio, magnetic disk and its performance, magnetic tape etc.

I/O Organisation: Peripheral devices, I/O interface, Modes of Transfer, Priority Interrupt, Direct Memory Access, Input-Output Processor, and Serial Communication. I/O Controllers, Asynchronous data transfer, Strobe Control, Handshanking.

Microprocessor Concepts: Basic Concept of 8-bit micro processor (8085) and 16-bit Micro Processor (8086), Assembly Instruction Set, Assembly language program of 8085: Addition of two numbers, Subtraction. Introductory Concept of pipeline, Flynn's and Feng's Classification.

SYLLABUS 2013-14

MCA-II YEAR

Duration : 3Hrs. **MCA-209 & 210** **Marks (Max. 100, Min. 35)**

PRACTICAL I : PROGRAMMING IN JAVA LAB.

Experiments based on the paper MCA 204

PRACTICAL II : WEB TECHNOLOGY LAB

Experiments based on the paper MCA 206.

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SYLLABUS 2013-14

MCA-III YEAR

Duration : 3Hrs. **MCA-301** **Marks (Max. 100, Min. 35)**

.NET FRAMEWORK (PROGRAMMING IN ASP.NET USING C#)

VB ActiveX Controls: Introduction, The TextBox Control, The List Box Controls, The Combo Box Control, The Scroll Bar, The Slider Control, The FlatScrollBar Control, File Controls, Timer Control, Advanced ActiveX Control, Common Dialogs Control, The TreeView Control, The ImageList Control, The ListView Control

Overview of ASP .NET Framework: ASP.NET and the .NET Framework, Understanding the framework class Library, Understanding the Common language Runtime, Installing the ASP.NET Framework, Introduction of ASP .NET, Creating your First ASP .NET Web, Understanding ASP.NET Pages, Understanding ASP.NET Controls, Overview of ASP.NET Controls, Understanding HTML Controls, Understanding and Handling Control Events, Understanding Control Trees, Using Code –Behind pages, Deciding Between Single-File and Code-Behind Pages, Handling Page Events, Using the Page.IsPostBack Property, Debugging and Tracing ASP.NET Pages, Debugging Pages with Visual Web Developer, ASP.Net Applications, Web Server, Installation of IIS Server in Windows XP/2000/2003

Web Forms & Web Forms Control: Introduction, Web Forms, WEB FORM CONTROL, Server Control, Client Control, WEB FORMS & HTML, Adding control to a web form, Submitting From Data, Accepting User Input, Using the Label Control, Using the Checkbox Control, Using the Radio Button Control, Performing Cross-Page Posts, Specifying a Default Button, Displaying Images, Using the ImageMap Control, Using the Panel Control, Using the HyperLink control, Running a Web applications, Multi forms, Creating a Multiform

Form Validation: Introduction, Client Side and Server Side Validation, Client Side Validation, Server Side Validation, Overview of the Validation Controls, Validation Control and JavaScript, Using Page.IsValid, Validation Controls, Using the RequiredFieldValidator control, Using the CompareValidator Control, Using the RangeValidator control, Calendar Control, Ad-rotator Control (Displaying Advertisements), Internet Explorer Controls, Using the RegularExpressionValidator Control, Using the CustomValidator Control, Using the ValidationSummary Control, Creating Custom Validation Controls, Creating a LengthValidator Control, Creating an Ajaxvalidator control

State Management & Rich Control: Introduction, State Management, Client – Side State Management, Server - Side State Management:, Advantages of State Management, Accepting File UPLOADS, Saving Files to the file System, Displaying Different Page Views, Displaying a Tabbed Page view, Displaying a Multi – Part form, Displaying a Wizard

Introduction of ADO .NET: Introduction, The ADO.NET Data Architecture, Component classes that make up the Data Providers, Connected and Disconnected Database, Create an XML Web service using ASP.NET, Create a disconnected ADO.NET Windows application, Create Connection using ADO .NET object model, Building a Connection String, Connection Classes, Executing Commands, DataSet Classes, Using an XSD Schema to Create a Typed DataSet, Using the Designer to Build a Typed DataSet, Programming with a Typed DataSet, DataAdapter Classes, Filling Typed DataSets Using TableAdapters, Adding Additional Queries to a Typed DataSet, Display data on data bound control, Working with List controls, Working with tabular databound controls, Using ASP.NET Parameters with DataSource controls, Overview of SQL Server 2005 Express , Features of SQL Server Express, SQL Server 2005 Express Management tools, Server Database Versus Local Databases

Database Accessing on Web Application: DataBinding Concept with Web, Understanding Templates and DataBinding Expressions, Using Templates, DataGrid Control, Creating DataGrid, Binding standard web server control, Working with tabular databound controls, Display data on web form using DataBound Control

Web Service & XML: Introduction to XML, Reading and Writing DataSet's Data in XML File, Writing Data in XML, Reading data from XML, Remote Method Call using XML, Web Services Overview, Soap Message, ASP.NET Web Services, Web Services Description Language, Building & Consuming a web service, Changes to our source, Performance Counter Web Service, Testing Web Services, Consuming, Contract, Command line tool, Using the Web Service, Web Applications Deployment, Deploying Applications

Overview of C#: Introduction, C# and .net, Similarities & Differences from JAVA, Structure of C# program, System Requirement for C#, Installing visual C# 2005 express edition, Starting Visual C# 2005 Express and

reating a console application:, Creating and Running C# Program, Language features, Variable, C# Data type, Properties, Type Casting, Reading and Writing through Console [Console Class], Control Flow Statement, Function/Methods in C#, Method Overloading, Arrays, Classes & Objects, Constructors, Destructors , Inheritance, Interfaces, Abstract Classes, Polymorphism, Operator Overloading, Delegates, Events, Exception Handling, Attributes, Boxing and Unboxing, Serialization in C#, Reflection in C#

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SYLLABUS 2013-14

MCA-III YEAR

Duration : 3Hrs. **MCA-302** **Marks (Max. 100, Min. 35)**

RDBMS (ORACLE)

Introduction to DBMS & RDBMS: Introduction to database, Introduction DBMS, Different database models, Structure of DBMS, RDBMS an introduction, Cod's law for RDBMS, Components of rdbms (kernel/data dictionary)

Introduction to Oracle RDBMS and Client/Server Computing: Introduction to Oracle, The Features of Oracle 9i, The oracle product details, An introduction to client/server computing, Oracle and client/ server computing

Overview of Oracle Architecture: Oracle Architecture, Oracle Files, System and User Processes, Oracle Memory, System Database Object, Protecting Data

Introduction to SQL*PLUS: Introduction to SQL, Features of SQL, Components of SQL, Cntroduction to SQL*PLUS, Features of SQL*PLUS, Execution of SQL*PLUS, Important commands used in SQL*PLUS, Oracle Data-Types

Working with Tables: Tables - An Introduction, Use of Table In SQL, Viewing The Stored Data In Tables, Filtering Table Data, Updating Data, Deleting Data From Tables, Modifying The Structure Of Tables, Destroying A Table, A Few Other SQL Statements

Data Constraints: Data Constraints, The Use of Data Constraints, The Types of Data Constraints, Defining Integrity Constraints By 'Alter Table', Removing Integrity Constraints, 'Null' Value Concept, 'Not Null' Constraint, Default Value Concept, 'User Constraints' Table

Data Manipulation in SQL: Oracle Operators, Range Searching, Pattern Matching, LIKE 'IN' and 'NOT IN' Predicates, An Introduction to 'DUAL' Table, An Introduction to 'SYSDATE'

Oracle Functions: Oracle Function, Function Types, Group Function, Scalar Function, Working With 'Date' in SQL, Grouping Of Data Of Different Tables In SQL

Joins, Sub-Queries & Views: TYPES OF JOINS, USE OF SUB-QUERY, 'UNION' AND CLAUSE, 'Intersect' Clause, Minus Clause, Concept of View, Types of View, Use of View

User Accounts Management & Indexing: Creation of User Account, User Account Management, Granting Privileges, Revoking Privileges, Modifying Password, Closing User Account, Concept of Index, Creation of Index, Types of Index, Use of Index, Deleting Index,

Introduction to PL/SQL Programming: Introduction to PL/SQl , Advantages of PL/SQL, Differences between SQL and PL/SQL, PL/SQL Block Structure, PL/SQL Character seet, Variable, Consant and Data type, Assignment Operator and the use of 'SELECT....INTO, PL/SQL Program Control Structure, The use of 'IF...THEN...ESLSE...ENDIF', Iteration Control (The use of LOOP, WHILE, FOR), The use of 'GOTO Statement

Cursor: Cursor an Introduction, Types of Cursor, Features of Cursor, Implicit Cursor, Explicit Cursor, Application of for Loop with Cursor

Exception Handling in PL/SQL: Exception Handling in PL/SQL, Built in Excpetion Handling, User Defined Exception Handling, The Raise Application-error Procedure

Oracle Transaction: Oracle Transaction, Cormmit Statement, Rollback Statement, Save point statement, Concept of lock, Types of locks, Levels of Locks, 'SELECT.....FOR UPDATE' Statement, Removing the Lock

Procedures and Functions: Concept of Procedures and Functions, Advantages of Procedure and Function,Creation of Procedure and Function, Deleting Procedure and Function

Database Triggers: Concept of Triggers, Types of Triggers, Creation of Triggers, Application of Triggers, Deleting Triggers

Oracle Database Administrator: Oracle Database Administrator, The Functions of Database Administrator, The Security and Privileges of The Administrator, The

Authentication of the Administrator, Creating a Secret Word File
DBA Utilities: Management the User, Creating Tablespace, Import/Export, Backup and Recovery **Oracle Advance Security Features:** Oracle Advanced Security Arrangements, Introduction, Applications, Administrative Tools, Oracle Net Manageram.

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SYLLABUS 2013-14
MCA-III YEAR

Duration : 3Hrs. **MCA-303** **Marks (Max. 100, Min. 35)**

DATA MINING

DSS-Uses, definition, Operational Database. Introduction to DATA Warehousing. Data-Mart, Concept of Data-Warehousing, Multi Dimensional Database Structures. Client/Server Computing Model & Data Warehousing. Parallel Processor & Cluster Systems. Distributed DBMS implementations.

DATA Warehousing. Data Warehousing Components, Building a Data Warehouse, Warehouse Database, Mapping the Data Warehouse to a Multiprocessor Architecture, DBMS Schemas for Decision Support, Data Extraction, Cleanup & Transformation Tools, Metadata

Business Analysis: Reporting & Query Tools & Applications. On Line Analytical Processing (OLAP). Patterns & Models. Statistics, Artificial Intelligence.

Knowledge Discovery, Data Mining, Introduction to Data-Mining, Techniques of Data Mining, Decision Tree, Neural Networks, Nearest Neighbor & Clustering. Genetic Algorithm, Rule Introduction, Selecting & using the right Techniques.

Multimedia Data-Mining, Multimedia Databases, Mining Multimedia Data, Data-Mining and the world Wide Web, Web Data Mining, mining, Mining and Meta-Data, Data Visualization & overall Perspective, Data Visualization, Application of Data-Mining

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SYLLABUS 2013-14
MCA-III YEAR

Duration : 3Hrs. **MCA-304** **Marks (Max. 100, Min. 35)**

ERP SYSTEM

Introduction to ERP: Evolution of ERP, What is ERP? Reasons for the growth of ERP, Scenario and Justification of ERP in India, Evaluation Of ERP, Various Modules of ERP, Advantage of ERP.

An overview of Enterprise, Integrated Management Information, Business Modeling, ERP for Small Business, ERP for make to order companies, Business Process Mapping for ERP Module Design, Hardware Environment and its Selection for ERP Implementation.

ERP and Related Technologies, Business Process Reengineering (BPR), Management Information System (MIS), Executive Information System (EIS), Decision support System (DSS), Supply Chain Management (SCM)

ERP Modules: Introduction, Finance, Plant Maintenances, Quality Management, Materials Management

ERP Market: Introduction, SAP AG, Baan Company, Oracle Corporation, People Soft, JD Edwards World Solutions Company, System Software Associates, Inc. (SSA) QAD, A Comparative Assessment and Selection of ERP Packages and Modules.

ERP implementation lifecycle, issues in implementing ERP packages, pre-evaluation screening, package evaluation, project planning phase, gap analysis, reengineering, configuration, implementation, team training, testing, going live, end-user training, post implementation (Maintenances mode).

Vendors, Consultants and users, In-House Implementation - pors and cons, vendors, consultants, end user.

Future Directions in ERP, New markets, new channels, faster implementation methodologies, business modules and BAPIs, convergence on windows NT, Application platform, new business segments, more features, web enabling, market snapshot.

SYLLABUS 2013-14
MCA-III YEAR

Duration : 3Hrs. **MCA-305 & 306** **Marks (Max. 100, Min. 35)**

PRACTICAL I: ASP.NET LAB

Experiments based on the paper MCA 301.

PRACTICAL II: ORACLE LAB

Experiments based on the paper MCA 302.

SYLLABUS 2013-14
MCA-III YEAR

Duration : 3Hrs. **MCA-307** **Marks (Max. 100, Min. 35)**

PROJECT

Students are required to complete Project allotted by the department, which will include the system design and implementation, (carrying equal weight-age of the total marks). Presentation / Seminar / viva will be based on the project work carried during the semester.

Report Format

Arrangement of Contents : The sequence in which the project report material should be arranged and bound should be as follows:

A. Cover Page & Title Page
B. Abstract
C. Conclusion
D. Table of Contents
E. List of Tables
F. List of Figures
G. Scope of Project
    a. Chapters
    b. Feasibility Study
    c. Project Scheduling
    d. Requirement Analysis
    e. Application Design
        i. Design Overview
        ii. Design Description
            1. Flow Chart
            2. Data Flow Diagram
            3. Control Flow Diagram
            4. UML Diagram
        iii. Database Design
            1. ER Diagram
            2. Table – Relationship Diagram
        iv. Test Plans
            1. Test case Analysis
        v. Implementation
        vi. Testing (tools if any)
H. Future Works

I. Appendices
J. References

NOTE: The table and figures shall be introduced in the appropriate places.

SYLLABUS 2013-14
MCA-III YEAR

Duration : 3Hrs. **MCA-307 Contd.** **Marks (Max. 100, Min. 35)**

PAGE DIMENSION AND BINDING SPECIFICATIONS: The dimension of the project report should be in A4 size. The project report should be bound using flexible cover of the thick plastic paper (Spiral Binding). Report should use Font Arial/ Times New Roman; Font Size: 14 (For Headings Bold) and 12 (For Paragraphs). Document can have maximum of 1.5 lines spacing.

COVER / FRONT PAGE Format

TITLE OF PROJECT

<Font Copperplate Gothic Light><Font Size 18><1.5 line spacing>

A PROJECT REPORT

<Font Copperplate Gothic Light><Font Size 14>

Submitted by

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NAME OF THE CANDIDATE(S)

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IN

Course Name

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