

SYLLABUS

MASTER OF SCIENCE

COMPTER SCIENCE



JODHPUR NATIONAL UNIVERSITY

JODHPUR

Master of Science COMPUTER SCIENCE

PREVIOUS

Paper I	Introduction to Computer and Pc Software
Paper II	Programming with Card Visual Basic
Paper III	Advance Database Management System
Paper IV	Operating Systems

FINAL

Paper V	Java
Paper VI	C ++ and Data Structures
Paper VII	System Software and Compliers
Paper VIII	Web Technology
Paper IX	Industry Based Environmental Studies

Paper I Introduction to Computer and Pc Software

Unit I

Basic computer Organization : Arithmetic, logic, control and memory units, Internal representation of information, characters and codes, memory access, contents, input and output units conversational devices, basic architecture of a CPU Instruction format. Fetch and execute cycle. Addressing modes. Control unit architecture.

Unit II

I/O Architectures: Characteristics of simple I/O devices and their controllers. Transfer of information among I/O devices CPU are 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 system.

Unit III

Introduction to MS Windows, concept of GUI, desktop, program, accessories, control panel, printers management, windows explorer, my documents, recycle, icons, shortcuts, files & folders, running applications under MS Windows. Introduction to MS Word, creating, editing, viewing, formatting and Printing documents, tools, tables, mail merge, spell checker and features of MS Word.

Unit IV

Introduction to MS Excel, creating worksheets, editing, formatting work sheets, working with cell range, formulas and functions, graphs, data handing, format and tools.

Unit V

Introduction to MS PowerPoint, creating, editing slides, viewing slides, inserting slides and frames, tools and slide shows, OLE.

Reference Books

- 1.Office 2000 for Everyone, Sanjay Saxena, Vikas Publications.
- 2.P.K. Sinha, Computer Fundamentals, BPB Publication.
- 3.First computer courses, Sanjay Saxena, Vikas Publications.
- 4.Fundamentals of IT, Leon and Leon, Vikas Publications.
- 5.Computer Architecture and Organization, Hayes, TataMcGraw Hill.

Paper II

Programming with Card Visual Basic

Unit I

C Language: Types, Operators and Expressions, variable names, data types and sizes, constants, declarations, operator, expressions and type conversions.

Control flow: Statements and blocks, selection and loops structures, break, continue, branching and labels. Functions and program structure: Basics, functions and their arguments, external variables and static variables, scope rules, register variables, block structures, initialization, recursion.

Unit II

Pointers and Arrays: Pointers and addresses, pointers and function arguments, pointers and arrays, address arithmetic, character pointers and function, multi-dimensional arrays, pointers arrays, pointer to functions.

Unit III

Structures: Basics, structures and functions, arrays of structures, pointers to structures, table lookup fields, typedef, file stack, linked list, prefix, postfix, infix, queue.

Unit IV

Introducing Visual basic, event driven programming, controls and events, menu system, program language, program design, forms and the controls writing and testing code, making an EXE file, logical testing, branching. User interface programming. Msg boxes, input box functions, scroll bars, frames, options, check boxes, menus, testing and debugging programs.

Unit V

Graphic object and properties for drawing, importing graphics, animation, procedures, functions forms, modules, recursive functions, multiple and startup forms, transferring, sub main, arrays, dimensions, elements and subscripts, control arrays, data file saving, data analysis, random access files, MD I forms, data manger, data controls, data aware controls.

Reference Books

1. Introduction to programming using Visual Basis 5.0, David Schneider, PHI
2. Programming with visual Basic 6.0, Mohammed Azam, Vikas publications.
3. ANSI C, E. Balagurusamy, Tata McGraw Hill

4. Programming in C, Gottfried, Tata McGraw.

5. Unix & C, A. Tutorial Introduction, Philip corneas, Tata McGraw.

Paper III Advance Database Management System

Unit I

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.

Unit II

Introduction to SQL, security and integrity of databases, 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, SOL Report Writer Selective dump report, Master – detail Report, Control- break, Test report. Stored Procedures and Functions: Stored Procedures, Creation and execution of procedures & functions, Stored functions and procedures.

Unit III

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, mater detail form, parameter passing in forms and reports.

Unit IV

Introduction to DB2, architecture, defining database, manipulating database, external views, DB2 internals, IMS architecture, IMS physical database, IMS logical database.

Unit V

Introduction to RPG/400 programming, report heading, eating, 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.

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.

Paper IV Operating Systems

Unit I

Introduction to Operating Systems, time sharing, PC, parallel, distributed, real time systems, system calls, system programs, process concept, process scheduling, CPU scheduling.

Unit II

Dead lock, characterization, methods for handing dead locks, prevention, avoidance, memory management, paging, virtual memory, page replacement, algorithms.

Unit III

Disk structure, disk scheduling, disk management, security, distributed system structure, Netware operating systems, distributed operating systems, semaphores, monitors.

Unit IV

Unix: History, programmer interface, file manipulation, process control, kernel, signals, file system, block and inodes, stream editor, character transliteration, VI editor.

Unit V

Shell script variables, file name expansion, shell commands, looping and making decision.

Reference

- 1.Advance Unix-A Programmer's Guide, Prata, SAMS
- 2.Operating System Concepts, Galvin, Addison Wesley
- 3.Operating System, Ritchie, BPB Publications.
- 4.Unix System V Primer, Prata, BPB Publications.

Paper V Java

Unit I

Introduction to Java, history, characteristics, Object oriented programming, data types, variables, arrays.

Unit II

Control Statement: selection, iteration, jump statement, operators

Unit III

Introduction to classes, class fundamentals, constructor, methods, stack class, inheritance, creating multilevel hierarchy, method over riding.

Unit IV

Packages and interfaces, exception handling, multi-threaded programming. I/O applets.

Unit V

Java Library, string handing, string comparison, string buffer, utility classes, vector stack dictionary, applet class, introduction to AWT, working with frame windows.

Reference books

- 1.V. Daniel Liang, Introduction to Java Programming, PHI.
- 2.Patrick Naught on, Java Complete Reference, Tata McGraw Hill.
- 3.The Java Handbook, Patrick Naught on, Tata McGraw Hill.
- 4.Introduction to Java programming, E Balagurusamy, PHI.
- 5.Programming Java, Decker & Hartsfield, Vikas Publications.

Paper VI C ++ and Data Structures

Unit I

Object Oriented Programming concepts, encapsulation, inheritance, polymorphism, class Object, complexity, analysis, Big O notation.

Unit II

Constants variables, Data types, Operators, expression, managing I/O, operators decision, making and branching, loopmg array.

Unit III

Strings, functions, structure, pointers, virtual functions, constructors, destructors, recursion.

Unit IV

Single linked lists, double linked list, circular list, sparse table, stack, queue, Deques list, priority queue, graph, spanning tree, shortest path, hashing.

Unit V

Tree, Binary Tree, Binary search tree, tree traversal, breadth – first, depth- first, insertion, deletion, AUL tree, Btree sorting, insertion, selection, bubble, decision tree, heap, shall, heap, quick, merge,sort, Radik sort.

Paper VII System Software and Compliers

Unit I

Introduction to compiler, structure of compiler role of the lexical analyzer, design of lexical analyzers, regular expressions, expressions, context free grammar, parse tree.

Unit II

Parsers, shifts reduce, operators, pre-cascade, LR parser constructing SLR grammar, parse tree.

Unit III

Intermediate code, parse tree, syntax tree, tree address code, quadruples and triples, translation of assignment statements, symbol table.

Unit IV

Evolution of the components of a programming system, machine language, assembly language, design of assembler, statement of problem, data stricter, format of databases, table processing searching, sorting.

Unit V

Macro instructions, features of macro facility, algorithms, macro calls, instruction for definition, two pass and single pass algorithms.

Reference

- 1.Principles of complier design, Alfred V Aho & Jeffrey D Ullman, Addison Wesley.
- 2.System Programming Donovan.

Paper VIII Web Technology

Unit I

Internet current state, hardware and software requirement, ISP an internet account, web home page, URL, browser, security on web, searching tools, search engines, FTP, Gopher, Telnet, emails, TFTP.

Unit II

Web browser architecture, webpage and multimedia, static, dynamic and active web page Simple network management protocol, hypertext transfer protocol.

Unit III

HTML, Crating web page, Methods of Linking publishing, HTML, “Text formatting and alignment, Font Control, Arranging text in lists, Images on a web page, Background and Color Control Interactive Layout with Frames”.

Unit IV

JavaScript, comment types, JavaScript reserved words, identifiers, events, primitive data types, escape sequences, data type conversion functions and methods, operators, control structures and statements objects, applet fundament, applet life cycle, local and remote applet applications, tags, creating and passing parameters to applets, exception handling.

Unit V

Java beans, beans architecture, AWT components, advantage of Java beans serialization, JDBC, class and methods, API components, JDBC components,driver, connectivity to database, processing result and interfaces, RMI, comparison of distributed and non-distributed Java programs, interfaces, RMI architecture layer, ODBC, CORBA, CORBA services andproducts, CGI, structure of CGI.

Reference

- 1.HTML 4 Unleashed, Darnell, BPB Publication.
- 2.Practical HTML 4, Philips, PHI.
- 3.JavaScript, Don Gosselin, Vikas Publication.
- 4.Principles of Web Design, Joel Sklar, Vikas Publication.
- 5.Web programming Kris Jamsa, Frank Bros & Co.

Paper IX Industry Based Environmental Studies

UNIT – 1

Environment – Definition – Scope – Structure and function of eco system's procedures, consumers and decomposers – energy flow in the ecosystem – ecological succession – food chain, food web and ecological pyramids - concepts of sustainable development.

UNIT – 2

Natural resources: Renewable – air, water, soil, land and wildlife resources. Non-renewable – mineral, coal, oil and gas. Environmental problems related to the extraction and use of natural resources.

UNIT – 3

Biodiversity – Definition – values – consumption use, productive social, ethical, aesthetic and option values threats to biodiversity – Hotspots of bio diversity – conservation of bio-diversity: In-situ Ex-situ. Bio-wealth – national and global level.

UNIT – 4

Environmental pollution : Definition – causes, effects and mitigation measures – Air pollution, Water pollution, Soil pollution, Noise pollution, Thermal pollution – Nuclear hazards – solid wastes acid rain – climate change and global warming environmental laws and regulations in India – Earth summit.

UNIT – 5

Population and environment – Population explosion – Environment and human health – HIV / AIDS – Women and child welfare – Resettlement and Rehabilitation of people, role of information technology in environmental health – Environmental awareness.