

MAHARSHI DAYANAND UNIVERSITY, ROHTAK*
Scheme of Examination (Semester System)

With effect from : 2016-2017

B.Sc. Part-I/II/III with Information Technology as a subject

Year	Semester	Paper	Name of the paper	External Marks	Internal Assessment	Exam Hours
First	1st	1.1	Fundamentals of Information Technology-I	40	10	3
		1.2	C Programming Language-I	40	10	3
		1.3	Practical (based on Paper-1.1 & 1.2)	50	–	4
	2nd	2.1	Fundamentals of Information Technology-II	40	10	3
		2.2	C Programming Language-II	40	10	3
		2.3	Practical (based on Paper-2.1 & 2.2)	50	-	4
2 nd	3rd	3.1	Object Oriented Programming Using C++ - I	40	10	3
		3.2	Computer Networks	40	10	3
		3.3	Practical (based on Paper-3.1)	50	–	4
	4th	4.1	Object Oriented Programming Using C++ - II	40	10	3
		4.2	Internet Programming	40	10	3
		4.3	Practical (based on paper 4.1 & 4.2)	50	–	4
3 rd	5th	5.1	Programming in Visual Basic	40	10	3
		5.2	Operating System	40	10	3
		5.3	Practical (based on paper 5.1)	50	–	4
	6th	6.1	Oracle	40	10	3
		6.2	Unix and Linux Operating System	40	10	3
		6.3	Practical (based on paper 6.1 & 6.2)	50	–	4

FIRST YEAR
First Semester
Paper -1.1 Fundamentals of Information Technology-I

External Marks: 40

Time: 3 Hrs.

Internal Marks: 10

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 4 parts (short-answer type questions) covering the entire syllabus and will carry 8 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 8 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Unit-1

Computer fundamentals and Number Systems:

Block diagram of a computer, booting process, Number system, necessity of binary number system, binary, octal and hexadecimal number system, inter-conversion of numbers, binary arithmetic, hardware and software concepts, system and application software, language translators: editor, loaders and linkers.

Unit-2

Input & Output devices:

Various input devices such as keyboard, pointing device, punched cards, optical scanners; output devices such as monitor (CGA, VGA, EGA and SVGA)), different types of printers and plotters. Primary and secondary memory, Cache, extended and expanded memory. Removable and non-removal secondary memory: tapes, disks, CDRom, DVD, comparison of these devices based on technology and speed. Organization of data on disk: Tracks, sectors, cylinders, heads, access time, seek time and latency time.

Unit-3

Operating System & Introduction to DOS:

Define Operating system, objectives and functions of an operating system, the operating system as a resource manager, types of an operating system. Features of DOS, Internal and External commands of DOS, file and directory management commands such as DIR, COPY, TYPE, DEL, DELTREE, UNDELETE, CHKDSK, FORMAT, XCOPY, SCANDISK, CREATING BATCH files using REM, ECHO, PAUSE, IF GOTO, AUTOEXEC.BAT and CONFIG.SYS files.

Unit-4

Features of Windows: Concepts of windows, menu, icon, opening, closing and resizing windows, creating folder, Using Start, control panel, recycle bin and online help, Windows Accessories - Calculator, Note Pad, Word Pad, Paint, Entertainment, Address Book, Windows Explorer-Creating a new folders and other explore facilities, changing the look and feel of windows (Desktop, Wallpaper, Screen saver etc.).

Suggested Readings:

1. Essentials of Computers and Network Technology by Nasib Singh Gill, Khanna Book Pub. Co., New Delhi.
2. Gill Nasib Singh: Computing Fundamentals and Programming in C, Khanna Books Publishing Co., New Delhi.

3. Chhillar Rajender S.: Application of IT in Business, Ramesh Publishers, Jaipur.
4. Computers Today by S.K. Basandra, Galgotia Publications.
5. Computers Today by Sanders
6. Computer Fundamentals by P.K.Sinha.
7. Fundamentals of Computers by V. Rajaraman
8. PC Software made simple by R.,K.Texali-Tata Mc Graw Hills
9. MS Office by Ron Mansfield BPB Publications.
10. Information Technology by Curtin
11. Computer Science Theory and Applications by E.Balaguruswammy.
12. Compact Guide to Windows, word and Excel by Ron Mansfield , BPB Publications.

NOTE: Latest and additional good books may be suggested and added from time to time.

Paper – 1.2: C Programming Language-I

External Marks: 40

Time: 3 Hrs

Internal Marks: 10

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 4 parts (short-answer type questions) covering the entire syllabus and will carry 8 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 8 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Unit-1

Overview of Programming: Introduction to computer based problem solving: requirements of problem solving by the computer, Problem identification, Problem definition, Example for problem solving, Problem solving strategies: Problem Design and implementation issues: Problems and Algorithms, Top-Design and stepwise refinement (breaking a problem into sub tasks).

Unit-2

Data organization or data structures: constructions of loops basis programming establishing initial conditions, terminating conditions, implementation (use of procedures for Modular Design, Choice of variable names, documentation of program, program testing); programming environment, Programming language classification.

Unit-3

Fundamentals of C Language & Control structure : Data types(int, float, char, double, void), Data structure, Constants and variables, variable declaration (integer, float, character, logical variable, string variable), Constraints, operators and Expression; Arithmetic operators, Relational Operators, logical operators, Expressions, Control construct, if then, for while; Arrays : Array declaration one and two dimensional arrays;

Unit-4

Functions- Fundamentals: General form, function arguments, Return value, basic I/O: Formatted Input/Output, Unformatted Input/Output, Program Design examples, advance features; Typed modifiers and storage class specifier for data type , Bit Operators? Operator, & operators, * operators. Type casting. Type casting conversion.

Suggested Readings:

1. Gill Nasib Singh: Computing Fundamentals and Programming in C, Khanna Books Publishing Co., New Delhi.
2. Yashwant, Kanetkar : Let Us C, BPB Publications.

3. Gottfried, B : Theory and Problem of Programming in C, Schaums' Series.
4. Kernighan & Ritchie : The C Programming Language, PHI
C Problem Solving and Programming, PHI.
5. E. Balagurusamy : C Programming (Tata McGraw-Hill Publishers)

NOTE: Latest and additional good books may be suggested and added from time to time.

Paper –1.3 : Practical (Based on Paper 1.1 & 1.2)

Max Marks: 50

Time: 4 Hrs

- (i) Practical : 40 marks
- (ii) Viva –voce : 10 marks

Second Semester

Paper – 2.1 Fundamentals of Information Technology-II

External Marks: 40

Time: 3 Hrs.

Internal Marks: 10

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 4 parts (short-answer type questions) covering the entire syllabus and will carry 8 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 8 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Unit-1

Data Communication : Data and information concept, data transmission, mode and forms of data transmission, communication channels, wire cables, Microwaves, fibres optics, communication satellites and wireless communications.

Unit-2

Computers Networks

Key issues for computer network, Single-user, multi-user, and client-server system; distributed and Parallel systems; Hardware & Software components of computer networks, Network topologies for LAN, & WAN , Various services and their use.

Unit-3

MS-word and Viruses

Understanding the features and applications of MS-WORD, Define word processor, types of word processor, creating document in MS word, formatting features of MS-word, word standard toolbar, text formatting, header and footer, auto text, document security features, table handling features, insertion of files and pictures, mail merge and macros. Virus and their types, virus detection, prevention and anti-virus packages.

Unit-4

MS-EXCEL, MS-POWER POINT

MS-Excel- Introduction to MS Excel, working with toolbar– File creation, Editing, Inserting, Formatting, formulas, data management, graphs & charts, macros, Printing and other additional functions.

MS PowerPoint – Introduction to MS Power point, Creating Presentation Slides, Animation, Formatting/ Adding Graphics, Slide Show, Customizing and Printing.

Suggested Readings:

1. Essentials of Computers and Network Technology by Nasib Singh Gill, Khanna Book Pub. Co., New Delhi.
2. Chhillar Rajender S.: Application of IT in Business, Ramesh Publishers, Jaipur.
3. Gill Nasib Singh: Computing Fundamentals and Programming in C, Khanna Books Publishing Co., New Delhi.
4. Computers Today by S.K. Basandra, Galgotia Publications.
5. Computers Today by Sanders
6. Computer Fundamentals by P.K.Sinha.
7. Fundamentals of Computers by V. Rajaraman
8. PC Software made simple by R.,K.Texali-Tata Mc Graw Hills
9. Understanding PC Tools by Peter Dysen
10. Understanding Norton Utilities by Peter Dysen.
11. MS Office by Ron Manafield BPB Publications.
12. Information Technology by Curtin
13. Computer Science Theory and Applications by E.Balaguruswamy.
14. Compact Guide to Windows, word and Excel by Ron Mansfield , BPB Publications.

NOTE: Latest and additional good books may be suggested and added from time to time.

Paper – 2.2: C Programming Language-II

External Marks: 40

Time: 3 Hrs.

Internal Marks: 10

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 4 parts (short-answer type questions) covering the entire syllabus and will carry 8 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 8 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Unit-1

Control structure & functions: Control constructs: do-while, switch statements, break and continue, exit () function, goto and label; Functions: Parameter passing-call by value and call by reference, calling functions with Arrays, argv and argv; Recursion.

Unit-2

Pointers: Dynamic Data structures in C: Pointers, the & and * operators, Pointer expression, pointer assignment Pointer arithmetic, Pointer comparison. The dynamic allocation functions – malloc and calloc, Pointer, Vs Arrays, Arrays of pointer, Pointer to Pointers, Initializing Pointers, Pointers to functions, function returning Pointer, Functions with variable number of Arguments.

Unit-3

Structures: Basics of Structures, Declaring a structure, Referencing structure elements, Array of structures, Passing structures to functions, passing entire

structure to functions, Structure Pointers, Declaring a structure pointer. Arrays and structures within structures Unions: Declaration, Uses, Enumerated Data types, typedef, Example algorithm: linked list: insertion, deletion and search; File Handling: The file Pointers, file accessing functions (fopen, fclose, putc, getc, fprint).

Unit-4

C preprocessor: define, # include, #undef, #conditional compilation directives (#if, #else, #elif, #endif, #def and #ifndef); C Standard Library and Header files, Header files (stdlib.h), type.h, string.h, math.h, stlib.h, time.h) etc., Standard library functions, string functions, Mathematical functions, Date and time functions, Variable argument list function, Utility functions, Character class test functions.

Suggested Readings:

1. Gill Nasib Singh: Computing Fundamentals and Programming in C, Khanna Books Publishing Co., New Delhi.
2. Yashwant, Kanetkar : Let Us C, BPB Publications.
3. Gottfried, B : Theory and Problem of Programming in C, Schaums' Series.
4. Kernighan & Ritchie : The C Programming Language, PHI
C Problem Solving and Programming, PHI.
5. E. Balagurusamy : C Programming (Tata McGraw-Hill Publishers)

NOTE: Latest and additional good books may be suggested and added from time to time.

Paper –2.3 : Practical (Based on Paper 2.1 & 2.2)

Max Marks: 50

Time: 4 Hrs

- (i) **Practical : 40 marks**
- (ii) **Viva –voce : 10 marks**

SECOND YEAR

Third Semester

Paper – 3.1: Object Oriented Programming using C++ - I

External Marks: 40

Time: 3 Hrs.

Internal Marks: 10

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 4 parts (short-answer type questions) covering the entire syllabus and will carry 8 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 8 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Unit-1

Principles of object-oriented programming: Software Crisis, software evolution , procedure oriented programming , object oriented programming basic concepts of object-oriented programming, Benefits of OOP, Object, Class Encapsulation, Data Hiding, Inheritance, Polymorphism, Analysis and design of system using object approach.

Unit-2

Structure of a C++ program and control structure: Include files, Declaration of an object, Main function, I/O streams. Class declaration: Data members, Member Function, Private and Public members, data hiding and encapsulation, arrays within a class. Scope resolution operator, manipulators, type cast operators, operators in C++, expression and their types. Control structure-sequence, selection and Loop.

Unit-3

Class and objects: Class function definition: defining member function inside and outside the class declaration, Private and public member function, nesting of member functions. Arrays within a class, memory allocation for objects, Static data members, Static member functions, Arrays of objects, objects as function arguments: Pass by value; pass by reference, Pointers to objects.

Unit-4

Constructors and Destructors : Constructors: Declaration and definition, default constructors, parameterized constructors, copy constructors, multiple constructors, constructors with default arguments , dynamic initialization of objects, dynamic constructors, constructing two- dimensional arrays, const objects. Destructors.

Suggested Readings:

1. Stropstrup The C++ Programming Language/Addison Wesley.
2. Robert Lafore OOP in Turbo C++/Galgotia Object Oriented
3. E.Balagurusamy Programming with C++.TMH Schieldt's Advanced
4. Herbert, Schildt Win95 Prog. In C & C++/mh

5. Lippman C++ primer, 3/e, Addison-Wesley.

NOTE: Latest and additional good books may be suggested and added from time to time.

Paper- 3.2: Computer Networks

External Marks: 40

Time: 3 Hrs.

Internal Marks: 10

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 4 parts (short-answer type questions) covering the entire syllabus and will carry 8 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 8 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Unit-1

Computer Networks: Introduction: Network definition, Network hardware and software network topologies, uses of computer Networks, OSI reference model, TCP/IP reference model. Comparison of OSI & TCP/IP reference models.

Unit- 2

Physical Layer: Transmission Media, Switching, ISDN and its service, Multiplexing, Modems. **Data Link Layer:** Design issue, Error detection and correlation codes, elementary data link protocols, static and dynamic channel allocation, Introduction to IEEE standards, sliding window protocol.

Unit-3

Network Layer: Design issues, routing algorithms, shortest path routing, flooding, broadcast & Multicast routing congestion control and internet working. **Transport Layer:** Transport service, Elements of transport protocols, Internet Transport protocols: UDP and TCP. Performance issues.

Unit-4

Application Layer: Network security & privacy, data compression and cryptography: symmetric key algorithms, public key algorithms;. Electronic mail, The WWW, Multimedia, Audio, Video, Remote login, file transfer.

Suggested Readings:

1. Computer Networks by A.S. Tannenbaum, PHI
2. Essentials of Computers and Network Technology by Nasib Singh Gill, Khanna Book Pub. Co., New Delhi.
3. Internet 6 in 1 by Kraynak & Hubraken, PHI 2000
4. Using the Internet by Kasser, PHI, 4th Ed, 2000
5. Using the World Wide Web by WALL, PHI, 2nd ed, 2000
6. Dynamic HTML by Cambell, B. Techmedia
7. Local Area Networks by William Stallings, Macmillian Pub. Co.
8. Data Networks by Black, PHI.
9. Introduction to Networking by Bary Nance, PHI

NOTE: Latest and additional good books may be suggested and added from time to time.

Paper –3.3 : Practical (Based on Paper 3.1)

Max Marks: 50

Time: 4 Hrs

- (i) Practical : 40 marks
(ii) Viva –voce : 10 marks

Fourth Semester
Paper – 4.1: Object Oriented Programming using C++ - II

External Marks: 40

Time: 3 Hrs.

Internal Marks: 10

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 4 parts (short-answer type questions) covering the entire syllabus and will carry 8 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 8 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Unit-1

Operator Overloading and Type conversions: Defining operator overloading, overloading Unary operators, overloading Binary operators, overloading binary operators using friends, manipulation of strings using operators, type conversions.

Unit-2

Inheritance and pointer - Extending classes Concept of inheritance, basic class, derived class, defining, derived classes, visibility modes, private, public, protected; single inheritance: privately derived, publicly derived, making a protected member inheritable, access control to private and protected members by members function of a derived class, multilevel inheritance, nesting of classes, pointers, pointers to objects, this pointer, pointers to derived classes.

Unit-3

Virtual functions: virtual functions, pure virtual functions.

Managing Console I/O Operations: C++ streams classes, formatted and unformatted input/output operations, managing output using manipulators.

Working with files- opening, closing and updating the file, error handling during file operations.

Unit-4

Templates & Exception handling: class templates, function template, overloading of template functions, member function templates, exception handling: throwing and catching mechanism, rethrowing and specifying exception.

Suggested Readings:

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|---------------------|--|
| 1. Stropstrup | The C++ Programming Language/Addison Wesley. |
| 2. Robert Lafore | OOP in Turbo C++/Galgotia Object Oriented |
| 3. E.Balagurusamy | Programming with C++.TMH Schieldt's Advanced |
| 4. Herbert, Schildt | Win95 Prog. In C & C++/mh |

NOTE: Latest and additional good books may be suggested and added from time to time.

Paper- 4.2: Internet Programming

External Marks: 40

Time: 3 Hrs.

Internal Marks: 10

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 4 parts (short-answer type questions) covering the entire syllabus and will carry 8 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of

the syllabus and each question will carry 8 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Unit-1

Internet Programming: Internet : Evolution of Internet, Future of Internet, Services provided on the Internet, Internet Access Methods. World Wide Web: Evolution of WWW, Future of WWW, Fundamentals of WWW Hypertext Markup Language: Introduction, Building Blocks of HTML, Lists, Links, Images in HTML.

Unit-2

Advanced HTML: Tables, Frames, Layers, Forms, Editors Cascading Style Sheets: Introduction, CSS positioning Front Page: Installing Front Page Editor, Create a sample website, frames in Front Page, Forms, Database Pages. Installing Netscape Communicator, Browsing internet using Netscape, Netscape Messenger.

Unit-3

Fundamentals of Java Programming: History, features, hardware and software requirements, environment, program structure, java tokens, java virtual machine, constraints, variables, data types, operators and expressions, decision making and branching, looping, concept of classes and methods, interfaces, packages.

Unit-4

Applet programming: Local and remote applets and applications, applet life cycle, passing parameters, java beans, JDBC, CORBA

Suggested Readings:

1. Introduction to Networking by Bary Nance, PHI
2. Essentials of Computers and Network Technology by Nasib Singh Gill, Khanna Book Pub. Co., New Delhi.
3. Internet 6 in 1 by Kraynak & Hubraken, PHI 2000
4. Using the Internet by Kasser, PHI, 4th Ed, 2000
5. Using the World Wide Web by WALL, PHI, 2nd ed, 2000
6. Using HTML by Phillips, PHI, 4th ed, 2000\
7. Special Edition using Front Page 2000 by Randall & Jones, PHI, 2000
8. An Introduction to Java Programming by Liang, PHI, 2000
9. Dynamic HTML by Cambell, B. Techmedia
10. Java Script by Jeff Frentzen & Henry Sobotka, Tata McGraw Hill, 1998
11. Computer Networks by A.S. Tannenbaum, PHI
12. Local Area Networks by William Stallings, Macmillian Pub. Co.
13. Data Networks by Black, PHI.

NOTE: Latest and additional good books may be suggested and added from time to time.

Paper –4.3 : Practical (Based on Paper 4.1 & 4.2)

Max Marks: 50

Time: 4 Hrs

- (i) Practical : 40 marks**
(ii) Viva –voce : 10 marks

THIRD YEAR

Fifth Semester

Paper – 5.1: Programming in Visual Basic

External Marks: 40

Time: 3 Hrs.

Internal Marks: 10

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 4 parts (short-answer type questions) covering the entire syllabus and will carry 8 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 8 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Unit-1

Visual Basic IDE : An Overview, the new project dialog, IDE elements and features, starting a new project or opening and existing one, saving your projects, setting environment, editor and general options, adding different modules to a project, the edit menu; the toolbox: Adding control to forms, adding components to the toolbox, the properties window, the Project explorer the form layout the format menu, making effective use of the code window; the object browser, the , menu editor, debugging tools, compiling executables.

Unit-2

Event-Driven Programming : Working with Visual Basic source Files, using the MSGBOX Function when an event is fired, adding code to a form click Event; Properties and Methods in Visual Basic : Properties, Methods, Event Firing order : Form Startup Events: From User Responses Events, Form Shutdown Events; The MSG-Box Function and Query Unload, Adding Code to Form and control events, Basic Concepts to Object-Oriented Programming, Encapsulating VB Dialog; Understanding Class Modules : Properties, Methods, Using class Properties and Methods, Creating, Firing and Handling.

Unit-3

Visual Basic Language Overview: VB code lines and comments, Identifiers, constants and Variables, using option explicit, numbers, operators, control loops and conditional statements, modules, subroutines and Functions, passing Arguments, programmer Defined Structures, Arrays; Speaking the Language of Objects; Using ActiveX controls, using ActiveX components.

Unit-4

Handling Errors : Kinds of errors, Syntax and compile time errors, Some guidelines for testing programs, On error, Resume and Resume next; The Error Object : The Raise method, common Trappable errors, The last DLL Error property; Raising and Error : Raising a user identifier Error; Debugging Tools, Using Assertions.
table, ordering the result of a Query Aggregate Functions, Grouping the Result of a Query, ROLLUP Operations: - Getting Cross Tabs, Command Summary of SQL Plus Editor./Getting Sub Totals, CUBE operations.

Suggested Readings:

1. Harold Davis : Visual Basic Secrets.
2. Natham Gurewich and Ori Gurewich : Visual Basic in 21 days Fourth Edition.
3. Brierley, E: Visual Basic 6 How to/ Techmedia
4. Cornell, G : Visual Basic 6 from the Groundup/TMH.
5. Evangelos, Petroustor : Mastering VB 6.0, BPB.
6. Jerke, N : The Complete Reference VB 6.0, TMH.

7. Cornel, Gary : Visual Basic from the Ground up, TMH
8. Vijay Mukhi : Mastering Oracle 6.0, BPB Publications, 1992.
9. James T. Perry & Joseph G. Lateer : Understanding Oracle, BPB

NOTE: Latest and additional good books may be suggested and added from time to time.

Paper – 5.2: Operating System

External Marks: 40

Time: 3 Hrs.

Internal Marks: 10

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 4 parts (short-answer type questions) covering the entire syllabus and will carry 8 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 8 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Unit-1

Fundamentals of Operating system: Introduction to Operating System, its need and Operating System functions, Types of operating systems, Structures - Simple Batch, Multi programmed, timeshared, Multi tasking, Multi Threading, Distributed Systems, Real-Time Systems, system calls.

Process Management: Process concept, Operation on processes, Process states and PCB, Cooperating Processes, Threads, and Inter-process Communication.

Unit-2

CPU Scheduling: Basic concepts, Scheduling criteria, Scheduling algorithms: FCFS, SJF, Round Robin & Queue Algorithms.

Deadlocks: Deadlock characterization, Methods for handling deadlocks, Banker's Algorithm.

Unit-3

Memory Management: Logical versus Physical address space, Swapping, Contiguous allocation, Paging, Segmentation.

Virtual Memory: Demand paging, Performance of demand paging, Page replacement, Page replacement algorithms, Thrashing.

Unit-4

File management: File system Structure, Allocation methods: Contiguous allocation, Linked allocation, Indexed allocation, Free space management: Bit vector, Linked list, Grouping, Counting, Directory Systems: Structured Organizations, directory and file protection mechanisms.

Device Management: Disk structure, Disk scheduling: FCFS, SSTF, SCAN, C-SCAN, LOOK, C-LOOK.

Suggested Readings:

1. Abraham Silberschatz, Peter B. Galvin, "Operating System Concepts", Addison-Wesley publishing. Co., 7th. Ed., 2004.
2. Nutt Gary, "Operating Systems", Addison Wesley Publication, 2000.
3. Andrew S. Tannenbaum, "Modern Operating Systems", Pearson Education

- Asia, Second Edition, 2001.
4. William Stallings, "Operating Systems, "Internals and Design Principles", 4th Edition, PH, 2001.
 5. Ekta Walia, "Operating Systems Concepts", Khanna Publishes, New Delhi, 2002.
 6. Godbole, A.S., "Operating Systems", Tata McGraw-Hill Publishing Company, New Delhi.
 7. Deitel, H.M., "Operating Systems", Addison- Wesley Publishing Company, New York.

Note: Latest and additional good books may be suggested and added from time to time.

Paper –5.3 : Practical (Based on Paper 5.1)

Max Marks: 50

Time: 4 Hrs

- (i) **Practical : 40 marks**
- (ii) **Viva –voce : 10 marks**

Sixth Semester Paper – 6.1: Oracle

External Marks: 40

Time: 3 Hrs.

Internal Marks: 10

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 4 parts (short-answer type questions) covering the entire syllabus and will carry 8 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 8 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Unit-1

Introduction to RDBMS: Approaches to Data Management, Database management – An Evolutionary Phenomenon, Introduction to DBMS, The 12 Rules (Codd’s Rules) for and RDBMS, Relational Database Management System (RDBMS), Oracle Server and Oracle Database, Oracle Products. Introduction to SQL Plus :Introduction to SQL, Oracle Data Types, Starting SQL Plus, Querying database tables, Conditional retrieval of rows, Working with Null Values, Matching a pattern from a

Unit-2

Querying Multiple Tables: Collating Information: Equi Joins, Cartesian Joins, Other-Joins, Self Joins, SET operators: Union, Intersect, Minus; Nested Queries. Functions, Column Functions: Arithmetic Functions, Character Functions, Date Functions, General Function, and Group Functions.

Unit-3

Data Manipulation and Control –I

Data Definition Language (DDL), Creating Tables, Creating a Table with data from another table, Inserting Values into a Table, with data from Another table, Deleting Row (s) from a Table, Dropping a Column, Introduction to Views, Manipulation the Base table(s) through views, Rules of DML Statements on Join Views, Dropping a View, Inline views, Materialized views.

Data Manipulation and Control –II

Database Security and Privileges, Grant Command, Revoke Command. Applications

Privileges Management, Enhancing Reference, Sequences, Maintaining Database Objects, COMMIT and ROLLBACK.

Unit-4

PL/SQL-I

Introduction to PL/SQL. The Advantage of PL/SQL block Structure. PL/SQL Architecture, Fundamentals of PL/SQL Data Types, variables and Constants, Scope and Visibility of a variable, Assignments, and Expression, Operator Precedence, Referencing Non-PL/SQL Variables, Built-in-Function, Conditional and Interactive Control, SQL, Within PL/SQL Code, Composite Data types.

PL/SQL-II

Cursor Management in PL/SQL, Cursor Manipulation, Implicit cursor Attributes, Exception Handling in PL/SQL Predefined Exceptions, User Defined Exception.

Suggested Readings:

1. Harold Davis : Visual Basic Secrets.
2. Natham Gurewich and Ori Gurewich : Visual Basic in 21 days Fourth Edition.
3. Brierley, E: Visual Basic 6 How to/ Techmedia
4. Cornell, G : Visual Basic 6 from the Groundup/TMH.
5. Evangelos, Petroustor : Mastering VB 6.0, BPB.
6. Jerke, N : The Complete Reference VB 6.0, TMH.
7. Cornel, Gary : Visual Basic from the Ground up, TMH
8. Vijay Mukhi : Mastering Oracle 6.0, BPB Publications, 1992.
9. James T. Perry & Josoph G. Lateer : Understanding Oracle, BPB

NOTE: Latest and additional good books may be suggested and added from time to time.

Paper – 6.2: Unix and Linux Operating System

External Marks: 40

Time: 3 Hrs.

Internal Marks: 10

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 4 parts (short-answer type questions) covering the entire syllabus and will carry 8 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 8 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Unit-1

Overview of UNIX structure, general purpose UNIX commands such as date, echo, cal, bc, pwd, passwd; file and directory commands such as ls, mkdir, cp, mv, rm process management commands such as ps, kill, nohup, communication commands such as news msg, wall; working with editor introduction to shell programming.

File and Director Permissions: File and Directory, ownership, User and ownership, Groups, changing group ownership, File Permission, UMASK Setting, Changing file Permission, Changing directory permission; Bash: What is Shell ? How the Shell gets Started, The most common Shells; The Bourne Again Shell: Commandline Completion, Wildcards, Command History, Aliases, Input Redirection, Output Redirection, Pipelines Shell m Prompts, Job control, Customizing bash, bash commands, bash variables.

Unit-2

Linux – tcsh : An Introduction totcsh, Command completion. Wildcards, Command

completion wildcards, Command History, Aliases, Input and Output Redirection, Pipelines, Prompts, Job Control; Key Bindings, Correcting Spelling Errors, Pre-Commands, Change directory Commands, Monitoring Logins and Logouts, Customizing tesh, tesh Command Summary, tesh variables.

Unit-3

Shell Programming: Creating and Running Shell Programs, Using variables :

Assigning a value to a variable, Accessing the value of a variable, positional Parameters and other Built-In Shell variables; The Importance of Quotation Marks: The test Command, The tesh Equivalent of the test command, Conditional Statements:

If Statement, case Statements; Iteration Statements : for Statement, While Statement, until Statement, shift Command, select Statement repeat Statement, Functions. Editing and Typesetting : Text Editors vi, The vi Editor, Starting vi, vi modes, Inserting Ttext, Quitting vi, Moving the Cursor, Deleting Text, Copying and Moving Text, Searching and Replacing Text, Setting Preference.

Unit-4

Linux for System Administrators: System Administration Basics, The root Account, Starting and Stopping the System, Booting from a Floppy, Using LILO to Boot, Shutting Down Linux; Mounting File Systems : Mounting a Floppy, creating as New file System, Un-mounting file System, Checking file Systems, Using a file as Swap Space; Compressing files with gzip and compress : Using tar, Backups, Setting up your System: Setting the System Name, Using a Maintenance Disk, Forgetting the root Password, Setting the Login Message.

Networking & Network Services: What is TCP/IP ? Hardware Requirements, Configuring Linux Files, Setting up the Dummy Interface, Configuration Files, Testing and Troubleshooting, The netstat Command, ping, Mail, News, NFS, NIS, www, FTP, DNS.

Suggested Readings:

1. Tim Parker : Linux Unleashed Third Edition, Techmedia, 1999
2. Tackett, J : Special Edition using LINUX, PHI
3. Norton, P. : Complete guide to LINUX, Techmedia.
4. Komarinski, M : LINUX System Administration Handbook, AW.

NOTE: Latest and additional good books may be suggested and added from time to time.

Paper –6.3 : Practical (Based on Paper 6.1 & 6.2)

Max Marks: 50

Time: 4 Hrs

- (i) Practical : 40 marks**
(ii) Viva –voce : 10 marks