8. COMPUTER STUDIES (Elective)

APPENDIX 'A'

(Outlines of Tests)

Paper - A: .. .. 100 Marks

This paper will consist of two parts :-

Part - I Introduction to Information Technology .. 50 Marks

Theory 35 Marks

Practical .. 15 Marks

Part - II Computer Programming .. 50 Marks

Theory 35 Marks

Practical ... 15 Marks

Paper - B : .. .. .. 100 Marks

This paper will consist of two parts :-

Part - I **Data Base Management Systems** .. 50 Marks

Theory 35 Marks

Practical 15 Marks

Part - II System and Network Administration .. 50 Marks

Theory .. 35 Marks

Practical .. 15 Marks

Grand Total : .. 200 Marks

APPENDIX 'B'

(Syllabi and Courses of Reading)

Paper - A : .. .. .. 100 Marks

Note : This paper will consist of Part-I and II.

Part-I .. 50 Marks

Part-II .. 50 Marks

PAPER-A (100 Marks)

PART - I : Introduction to Information Technology (50 Marks)

Theory: 35 Marks
Practical: 15 Marks

Theory :

Overview of Computer Systems: Uses, importance, future needs; Types of Computers: super,mainframe, mini, micro, desktop, notebook, personnel, and workstations. Processing of Data: data and information, text codes. Part of Computer: CPU, control unit, arithmetic unit, memory, ROM, RAM, flash technology, , flash memory, cache memory, computer clock, control bus, data bus, address bus, co-processors, types of microprocessors. Interacting with Computer: input devices, e.g. key board, keys, arrangement on keyborard, mouse trackbals, touch pads pens, touch screens, barcode readers etc; output devices: monitors, types of monitors, resolution, refresh rate, dot pitch etc. Printers: types of printers, plotters. Storage Devices: floppy disk, hard CD, tape disk, magnetic and optical storage Types of Software: Systems software, shareware, and application software. Operating Systems: operating systems and user interface, running programs, managing files, managing hardware, utilty programs. Network and Data Communication: uses of network. Types of Network: LAN, WAN, File Server, Client/Server, peer-to-peer. Network Topologies: bus, star ring. Network Media and Hardware, Network Software, Data Communication over Telephone Lines: modem, ISDN, T1, T3 and ATM. Internet: How does Internet works, backbones, gateways, addressing schemes. Features of Internet: email' news, telnet, FTP, gopher' chat' World Wide Web, online services. Accessing the Internet Application : connection through LAN, connection through modem, connection through high-speed lines.

Recommended Books

1. "Introduction to Computers" by Peter Norton.
2. "Discovering Computers 2002", G.B. Shelly, T.J. Cashman and M.E. Vermatt.
3. "Introduction to Computer Science", Scham's Series.

Practical :

Windows 2000

1. Exploring Windows 2000 work place: desktop component and customizing them exploring parts of a window, menu and dialog boxes, multitasking, and shutting down windows.
2. Working with the Accessories: calculator, notepad, wordpad, paint program, media player, etc.
3. Organizing files and folders using window explorer.
4. Using Windows System Tools, Working with Control Panel' Installing new software and hardware.

5. Using Internet: working with Internet explorer, surfing with Internet explorer, working with e-mail.

Word 2000:

1. Exringlo Word 2000 work place: document, menus, toll bars, dialog boxes' and other icons.
2. Saving and opening documents.
3. Editing and formatting text.
4. Formatting and printing documents
5. Working with tables and graphics
6. Working with Mail Merge and hyper links

Excel 2000:

1. Exploring Excel 2000 work place: workbook, worksheet, menus, toll bars, dialog boxes, and other icons.
2. Worksheet basic: entering data, editing worksheet, inserting & deleting cell, hiding data, copying data and auto fill.
3. Formatting and printing a work sheet.
4. Using functions in formulas.
5. Creating chartsa and adding graphics.

Front Page 2000:

1. Exploring Front Page environment.
2. Designing documents: working from Page View.
3. Developing the basic page: text, list, and hyperlinks, talbes, frames.
4. Enhancing pages with graphics and multimedia.
5. Publishing pages on the web.

Recommended Books

1. "Microsoft Windows 2000 Professional : Comprehensive Course" by D. Busceh and M. Bergerud (2001).
2. "Teach Yourself: Microsoft Windows 2000 Professional" by B. Underdah.
3. "Microsoft Windows: millennium edition fast & easy', by D. Koers (2000).
4. ',Microsoft Word 2000 Simplified" from maran Graphics, IDG Books (1999).
5. "Learn Word 2000" by J. Preston, S. Preston, and R. Ferrett (1999).
6. "Excel for Windows 2000" by M. Langer (1999).
7. "Microsoft Excel 2000: Comprehensive Course" by H.A. Napier and P.J. Judd
8. "Unsing Front Page 2000: special edition" by N. Randall and D. Jones (1999).
9. "Mastering Front Page 2000" by D.A. Tauber & et. al. (2001).

PAPER - A

PART - II: COMPUTER PROGRAMMING (50 Marks)

Theory: 35 Marks
Practical: 15 Marks

Tool: Visual Basic

Theory:

Introductory Programming Concept: problem solving, algorithms' and pseudo code. Programming Techniques : visual programming, event driven programming, object oriented programming, structured programming. Visual Basic Intergrated Development Environment. Control Elements. Data Types. Variables and Assignment Statements. Arithmetic Operators and Scope: data conversions, expressions, variable scope, declaring form and project variables and constants. Modules and Procedures: sub-procedures, event procedures, function procedures, and optional, argument., Branching and Looping: procedures, function procedures, and optional argument. Branching and Looping: relational operators and logical expressions, logical operators, if-tehn-Else, Case, For-Next, Looping with Do and While lpp: Menu and Dialog Boxes ; Arrays Searching and ! Sorting: what is array, declaring arrays, using arrays, control arrays, enumerations user defined types. Error Handling. Sequential Files: file details, file operators, add report to programs, programming with fixed report length. Introductory database programming: why use database, data control, and creating data-bound controls.

Recommended Books:

1. "Computer programming with Visual Basic 6" by Alka R. Harriger, Susan K. Lisack.
2. "Visual Basic 6: How to Program" by Deitel, Deitel and Nieto Prentice-Hall.
2. "**Visual Basic** 6: How To Programm" by Deitel, Deitel and Nieto Prentice-Hall
3. "Visual Basic" by B. S. Gottfried (2001 Schaum's outlines.
4. "Using Visual Basic (Special Edition)", by Brian Siler and Jeff Spotts.

Practical:

Students must implement the concepts studied in theory part. For practice see examples given in "Computer programming with Visual Basic 6" by A. R. Harriger, S.K. Lisack and "**Visual Basic** 6: How to Program" by Deitel, Deitel and Nieto. Some practical examples AS guide line are given below:

1. Test if a given integer is odd or even.
2. Given the sides of a triangle, determine the type of the triangle.
3. Print integers in the specified range; make every alternate integer in the output negative.
4. Print leap years in a give century.

5. Given two strings, count the number of times the second string appears in the first string.
6. Create a Program that convert Fahrenheit temperature to the Celsius scale and back again.
7. Search for a given name in an array of names.
8. Reverse an array.
9. Reverse a given string.
10. Build a scientific calculator.

PAPER - B (100 Marks)

PART - I: Database Management System (50 Marks)

Theory: 35 Marks
Practical: 15 Marks

Theory:

Introduction to Database Processing: relationship of application programs and the DBMS, file-processing systems, database processing systems, history of database processing. Database Development: database and DBMS, creating a database, components of database applications, database development processes. Entity Relationship modeling. Semantic Object Model. Relational Model and Normalization: relational model, normalization —1 to 5th normal forms, domain/key normal form, synthesis of relations, multivalued dependencies, Iteration 2. Database Design Using Entity-Relationship Models: transformation of entity-relationship models into relational database designs. Database Design with Semantic Object Models : transformation of database designs. Database Design with Semantic Object Models: transformation of semantic objects into relational database designs. Database Application Design : characteristics of database applications, form design, report design, application program design. Foundations of Relational Implementation: defining relational data, relational data manipulation. Structured Query Language : querying a single table, querying multiple tables, exists and not exists, changing data. Relational Implementation for Personal Databases : creating the database schema, creating forms, creating reports. Client-Server database systems. : client-server architecture, reliability and security, open database connectivity (ODBC) standards, applications of ODBC in client-server systems.

Recommended Books:

1. "Data Base Processing", Sixth Edition By David M. Kroenke (1998).
2. "Database Systems',, by C.M. Ricardo.
3. "Fundamental of Database Management Systems", by R. Elmarsi and S.B. Navathe.
4. "Fundamental of Database Systems" by C. J. Date

Practical:

1. Exploring Access 2000 work place: opening access applications, menus, toll bars other components.

2. Designing and creating a database.
3. Entering and editing data into tables.
4. Designing and using basic forms.
5. Integrating Access with other Microsoft Office applications and Internet.
6. Establishing Relationships between tables.
7. Finding, soring and filtering information.
8. Creating basic queries.
9. Designing and using basic reports.
10. Creating and using data access Pages.
11. Creating action queries.
    ning advanced queries.

Recommended Books:

"Microsoft Access 2000: Comprehensive Course" by H.A. Napier & P. J. J. (2001)

PAPER - B

PART - II: Operating Systems and Networks **(50 Marks)**

Theory: 35 Marks
Practical: 15 Marks

Theory:

Introduction to Operating Systems: Types of operating systems, operating systems modes. Process Management: process scheduling, process state, scheduling criteria, process supervisor calls. Inter-process Communication and Synchronization : inter process communication, deadlock, deadlock presentation, deadlock avoidance, deadlock detection, recovery from deadlock. Memory Management : simple absolute partition, single relocateable partition, multiprogramming, multi partitions, simple paging, simple segmentation, segmentation with paging, page and segment table, swapping, overlaying. Virtual Memory: demand paging, segmentation. File Systems Management: directories and names, types of file systems objects, file system functions, information types, file system architecture, Device Management: hardware I/O organization, software organization, devices. Security: authentication, preventation, detection, correction, identification, threat categories, program threats.

Networking Basic Concepts: line configuration, topologies, transmission modes, categories of network, internetwork. The OSI Model: layered architecturre, functions of the layers. TCP IP protocols suite. Transmission Media: twisted-pair, coaxial cable, optical fiber:

Recommended Books:

"Operating Systems" by J.A. Harris (Schaum's outlines) 2002.

"Data Communications and Networking" by B.A. Forouzan, 2nd edition.

Practical:

1. Installation of Windows 2000 Professional: Installation from CD, Installation from Network.
2. Configuring the Windows 2000 Environmentt : Control Panel, Management Console, Installing New Hardware.
3. Managing the Desktop: Desktop Settings, Accessibility Features, Local Settings.
4. Managing Users: Creating Users, Disabling User Account, Deleting User Account, Renaming User, Changing Password, Managing User Properties.
5. Managing Groups: Creating Groups, Group Membership, Renaming Group, Deleting Group, Local Group Policies.
6. User Profiles and Hardware Profiles: Local User Profiles, Roaming Profiles, Mandatory Profiles, Managing Hardware Profiles.
7. Managing Disks: File Systems, File System Conversions, Disk Storage, Disk Management Utilities.
8. Files and Printing Management: File and Folder Basic Management, Creating Shares, Share Permissions, Managing Printer Properties, Sharing Printer, Printer Permissions.
9. Managing Network Connections: Network Dataflow, O S I Model Layer, Installation and Configuration of Network Adaptor, Installing and Configuring Network Protocols.
10. Dialup Networking and Internet Connectivity: Configuring General Modem Properties, Running Modem Diagnostics, Configuring Advanced Modem Properties
11. Managing System Recovery Functions: Recovery and Backup, Using Backup Utility, Using Restore Wizard.

Recommended Books:

"Windows 2000 Professionals Study Guide" by L Donaisald (2001).