

**MAHARASHTRA STATE BOARD OF VOCATIONAL EDUCATION EXAMINATION,  
MUMBAI - 51**

1	Name of Course	<b>CERTIFICATE COURSE IN COMPUTER TECHNIQUES (101205)</b>																																																													
2	Max. Nos. of Student	25 Students																																																													
3	Duration	1 Year																																																													
4	Type	Full Time																																																													
5	Nos. of Days / Week	6 Days																																																													
6	Nos. of Hours /Days	7 Hrs																																																													
7	Space Required	Theory Class Room – 200 sqft Practical – 800 sqft																																																													
8	Entry Qualification	S.S.C. Passed																																																													
9	Objective Of Syllabus/ introduction	<p>To enable the students to</p> <ol style="list-style-type: none"> <li>1. develop awareness about Computer fundamentals.</li> <li>2. enhance their knowledge about Computer operations, networking and software packages.</li> <li>3. acquire skills in Computer operations and use of the Internet.</li> <li>4. acquire skills in sales and marketing of Computer systems and Peripherals.</li> <li>5. know about different Computer Networking applications including database</li> </ol>																																																													
10	Employment	Trainee can get job in computer related establishment.																																																													
11	Teacher's	Degree / Diploma in Computer Science & Engg.																																																													
12	Training System	<p><b>Training System Per Week</b></p> <table border="1"> <tr> <td>Theory</td> <td>Practical</td> <td>Total</td> </tr> <tr> <td>18 Hours</td> <td>24 Hours</td> <td>42 Hours</td> </tr> </table>						Theory	Practical	Total	18 Hours	24 Hours	42 Hours																																																		
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**THEORY - I**  
**Introduction to Computers & Computer Networks**  
**PART A**

**1. Computer Fundamentals**

- 1.1 Basic Anatomy - Block Diagram of Computer, Introduction to Computer System Specifications and standard terms used for it, such as, processor speed, on board memory, cache, display adapter, ports and slots, drives and BIOS.
- 1.2 Characteristics of Computer - Speed, storage, accuracy, versatility, automation, diligence.
- 1.3 Classification - Standalone PC's, Workstations, Servers, Laptop, Palmtop, Desktop, supercomputers and mainframe computers.
- 1.4 Data Representation - Binary Number system, bit, nibble, byte, word, numeric data, character data, ASCII and Unicode.

**2. Input Output and Data storage devices Input / Output Devices :**

- 2.1 Input Devices - Keyboard, mouse, touch-screen, joystick, scanner -hand held, flatbed, drum type.
- 2.2 Output Devices - CRT and LCD Monitors, Concept of Graphic Display Adapters, VGA, SVGA, Accelerator Graphic Port (AGP).
- 2.3 Printers - Impact:9/24 pin dot matrix, line printers, Non-Impact: Ink Jet, Laser, concept of DPI, CPS, PPM, Plotters.
- 2.4 Modems : Need of Modem, Baud rate, modem speed, cable modem, satellite modems, Data Storage Devices.
- 2.5 Electronic Memories - ROM, EPROM's, EEPROM, Flash, ROM, NVRAM, Static RAM, Dynamic RAM, RDRAM, SDRAM, Memory Chip Packages : DIP, SIMM, DIMM, COAST.
- 2.6 Magnetic Memories - Floppy Drives, Hard Disk, ZIP drives, Tape drives.
- 2.7 Optical Storage Devices - DVD and CD Readers and Writers.

**3. Overview of Computer Languages**

- 3.1 Machine language - Necessity, area of application, example
- 3.2 Assembly language - Necessity, area of application, example
- 3.3 Review of high level languages, Advantages, features of BASIC, FORTRAN, COBOL, C, PASCAL, LISP etc.
- 3.4 4th Generation Languages - C++, Java, Visual Basic, C# etc.
- 3.5 Compiler, Interpreter, Assemblers: Concepts, Advantages and disadvantages.

**4. Operating Systems**

- 4.1 Concepts - Definition, need, overview of services and features of OS.
- 4.2 Batch Processing, Multiprogramming, time sharing, real time, distributed computing, multitasking.
- 4.3 Windows - Windows XP/2003 features, plug and play concept.
- 4.4 Linux (Red Hat Linux 9) Introduction, File housekeeping utilities, file and data processing utilities.

**5. Software Utilities**

- 5.1 Data Archival and Compression: Lossy and Lossless Compression
- 5.2 Archival/Compression formats zip, cab and rar. Features and options provided in packages
- 5.3 Data Security and Encryption and its benefits
- 5.4 File and disk Maintenance: Disk Compression, Error Checking, Defragmentation, Cleanup and Backup.
- 5.5 Rogue Software and its types, Chameleon, Trojan horse, Software Bomb, Worm, Virus, and Rabbit, Protection, Detection and Removal techniques
- 5.6 Anti-Virus and Anti-Spyware Programs

## **THEORY - I**

### **PART B**

#### **1. Introduction to Networking**

- 1.1 Network in initial stages
- 1.2 Communicating ways of different computers in early stages
- 1.3 Development of ways of communication between 2 computers and the latest trends
- 1.4 Media of communication (Bounded and Boundless)
- 1.5 Network Components (Routers, Switches, Hubs, Repeaters, Bridges, Modems etc.).

#### **2. Network Environment**

- 2.1 Access methods
- 2.2 Network Architecture (Peer-to-Peer, Client Server)
- 2.3 Network Topologies (Star, Bus, Ring, Mesh and their combinations)
- 2.4 Introduction to Ethernet.

#### **3. Network Applications**

- 3.1 Domain Servers, File Servers, Print Servers and related services
- 3.2 Web servers ( like Apache, IIS etc.)
- 3.3 Over vies of ASP ( to understand Client Server computing )
- 3.4 VNC (to understand remote procedure calls (RPC) for remote computing)
- 3.5 Difference between OS (Operating System) and NOS (Network Operating System).

#### **4. Network Protocols**

- 4.1 Understanding of the TCP/IP protocol suite
- 4.2 Relation between TCP/IP and OS layers (OSI model)
- 4.3 Proprietary and Non-Proprietary protocols
- 4.4 Protocol features - error checking, speed etc.
- 4.5 Reason for TCP/IP popularity
- 4.6 Other Popular Protocols.

**parameters. A minimum of 25 practicals per paper should be performed.**

## **PRACTICAL - I**

### **PART A**

1. Familiarization with Windows, Desktop Features
2. Study of Control Panel and Settings of :  
    1] Display   2] Audio Devices   3] Network   4] Internet Options   5] Fonts
3. Printer Setup in Windows
4. Modem Setup in Windows
5. Familiarization with the Features of Red Hat Linux 9 or Greater
6. Study of File Archival using zip -WinZip or WinRAR
7. Study of File Archival using rar - WinRAR
8. Archived File Encryption using Password Protection Features in WinZip and WinRAR
9. Study of a Free/Shareware Anti-Virus Utility such as AVG6 Free Edition
10. Study of a Free/Shareware Anti-Spyware Utility.

**NOTE : Though a list of only ten Experiments has been provided for each paper, students have to perform each of the above experiments with 3 different sets of parameters. A minimum of 25 practicals per paper should be performed.**

## **PRACTICAL - I**

### **PART B**

#### **Practicals**

1. Setting up a NIC (Network Interface Card) and assigning IP address and subnet
2. Defining a Domain Model on a Windows Servers
3. Setting up a Workgroup based network
4. Setting up user level hierarchy with different security levels
5. Sharing a Printer on the network for printing over the LAN
6. Sharing files and folders with rights to specific users in a Domain Model
7. Creation of various websites on a single Web Server and changing the Home Directory (WWW) of a IIS server
8. Accessing Physical media on a node from the server ( like floppy drive or CD drive)
9. Writing a simple ASP code to display the current date and time
10. Configuration of a Proxy Server For Internet Connection Sharing with Restricted Access.

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## **THEORY - II**

### **Desktop and Web Publishing, Database Systems**

#### **PART A**

#### **1. Introduction to DTP**

- 1.1 Introduction - Paperback Printing/Publishing; modern printing, desktop publishing, laser and dot-matrix printers, scanners.
- 1.2 Document planning - Creating and using thumbnail sketches, setting margins, establishing layouts with grids, master pages, columns, typefaces, type styles and fonts, headings and sub-heads, leading
- 1.3 Pre-Press Designing and Production Techniques
- 1.4 Book Binding Techniques ( for Printing Margin setup ).

#### **2. HTML**

- 2.1 Features, Properties and Limitations
- 2.2 HTML Tags and Attributes
- 2.3 Creating Hyperlinks
- 2.4 Physical Style Tags
- 2.5 Images in HTML
- 2.6 Tables in HTML.

#### **3. Graphics using Corel Draw**

- 3.1 Introduction to CorelDraw
- 3.2 Tools and menus
- 3.3 Basic drawing working with text-basic
- 3.4 Units and Measurements (Pica, Points, Millimeters, Centimeters etc.)
- 3.5 Page Layout
- 3.6 Color Schemes and Matching
- 3.7 Newspaper Layout Schemes (Global Standards)
- 3.8 Printing.

#### **4. Introduction to Indian Language Word Processors**

4.1 Introduction to Indian Language Word Processors I Leap or India Page

4.2 On-Screen Language Keyboard Layouts

4.3 Creating simple documents and letters in an Indian Language Word Processor

4.4 Exporting the document to other file formats and Font Embedding.

### **THEORY - II**

#### **PART B**

##### **1. Database Concepts**

1.1 Definition and need of a database

1.2 Difference between database and spreadsheet

1.3 Database Components

1.4 Database Management System (DBMS).

##### **2. Introduction to RDBMS**

2.1 Basic Concepts of database and RDBMS

2.2 Shortcomings of file management system

2.3 Difference between a database and a database system

2.4 Benefits of a database approach, Data independence

2.5 The database management system

2.6 The database administrator

2.7 Database users.

##### **3. Introduction to MS Access**

3.1 Study of MS Access screen and menus

3.2 Database terminology

3.3 Data Types in Access

3.4 Rules for Field Names

3.5 Creating a simple database

3.6 Viewing and editing data

3.7 Relationships

3.8 Utilities in Access

3.9 Querying database

3.10 Printing your data.

##### **4. Databases in a Network Environment.**

4.1 Server Class Operating Systems

4.2 Client-Server Applications

4.3 ODBC DSN

4.4 Introduction to SQL

4.5 Overview of Database Access using ASP.

## PRACTICAL - II

### PART A

1. Study of Units and Measurements in CorelDraw
2. Page Layout and Design according to a sample newspaper in CorelDraw
3. Graphic Import from different formats and Export to different formats in CorelDraw
4. Text Wrap techniques around graphics
5. Page layout with margin settings in PageMaker
6. Column settings in a page with auto text flow enabled in PageMaker
7. Creating TOC (Table of Contents) with PageMaker
8. Exporting PageMaker contents to RTF format
9. Creation of a Simple Web Page with Formatting Using Physical Style Tags and Hyperlinks
10. Creation of a Simple Web Page with Image and Tables.

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### PART B

#### Practicals

1. Create a Database to Store Records of students Performance in Std. XI.
2. Create an appropriate form to fill data into a database in Practical 1.
3. Write an appropriate query to display records of database in Practical 1 in various orders.
4. Copy one table from a database to another database with/without data.
5. Import a text file into an Access database.
6. Export an Access database to to dBase III/ Excel/HTML / text.
7. Create a multiplexed database with tables representing career records of cricketers.  
Use relationships to access identity in both tables.(Separate tables for Batting, Bowling and Fielding).
8. Study of 'compact' feature on a sample database and comparison with the original.
9. Application of password and encryption to a database.
10. Create an ODBC DSN for Access Database to use the same over a network.

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**THEORY - III**  
**Office Automation & Computer Applications**  
**PART A**

**1. Microsoft Word**

- 1.1 Introduction and Layout, Various Views and Toolbar, Customizing a toolbar or menu
- 1.2 Creating a simple document and saving the same
- 1.3 Use of various text formatting options such as Font Size, type, color, bold, italic, underline, superscript, subscript etc. Use of Paragraph, indenting, alignment and spacing options
- 1.4 The Cut Copy, Paste, Format Painting, Undo, Redo, Find and Replace Options
- 1.5 Headers Footers Page Numbers, Page and Section Breaks
- 1.6 Numbered and Bulleted Lists and related formatting, Borders and Shading
- 1.7 Insertion of Tables, Rows and columns, merging and splitting cells, formatting Tables
- 1.8 Inserting Images and Equations, Drawings, Charts and other Word Files and Excel Spreadsheets
- 1.9 Mail Merge and Language Thesaurus Options
- 1.10 Page Setup, Print Setup, Print Preview and Print Options, Print to File
- 1.11 Save as and Open commands and various file formats
- 1.12 Creating and Deleting Hyperlinks, Font Embedding in Word
- 1.13 Word Help and Office Assistant.

**2. Microsoft Excel**

- 2.1 Introduction and Layout, Various Views and Toolbar, Customizing a toolbar or menu
- 2.2 Creating a simple spreadsheet and saving the same
- 2.3 Use of various text formatting options such as Font size, type, color, bold, italic, underline
- 2.4 The Cut Copy, Paste, Undo, Redo, Find and Replace Options
- 2.5 Cell Formatting Options such as Horizontal and Vertical Alignment, Data Types, Borders and Shading and Cell Protection
- 2.6 Creating Charts (Pie and Bar), Inserting Images and Drawings
- 2.7 Use of Formula, Mathematical and Trigonometric expressions and Logical Conditions. Linking cells and spreadsheets using formula
- 2.8 Print Area, Page Setup (Sheet, Header/Footer and Margins), Print Setup, Print Preview and Print Options, Print to File
- 2.9 Save as and Open commands and various file formats
- 2.10 Data Sorting Options, Fill Formatting and Series Options
- 2.11 Excel Help and Office Assistant.

**3. Microsoft PowerPoint**

- 3.1 Introduction to PowerPoint and Presentations
- 3.2 PowerPoint Views and Controls on the Standard and Formatting Toolbar
- 3.3 Object/Text Editing and Text Formatting Controls
- 3.4 Creation of a Presentation in PowerPoint
- 3.5 Text Alignment, Insertion of Images, Drawings, Graphs and Tables
- 3.6 PowerPoint Wizard, Slide Backgrounds and Designs
- 3.7 Slide Show, Default and Custom Animation, Animation Schemes
- 3.8 PowerPoint Presentations (PPT), PowerPoint Shows (PPS) and Pack and Go and the differences between them, Embedding Fonts
- 3.9 PowerPoint Help and Office Assistant.

#### **4. Introduction to Microsoft FrontPage**

- 4.1 Creation of a Simple Document in PageMaker
- 4.2 Introduction and Layout, Various Edit (Design), Code (HTML) and Preview View Modes, Familiarization with the Standard and Formatting Toolbar Controls, Editing Features
- 4.3 Creating a simple webpage and saving the same
- 4.4 Use of various text formatting options Headings and Paragraphs with Alignment
- 4.5 Physical Styles, Font Type Color and Size, Bold, Italic, Underline, Superscript and Subscripts
- 4.6 Lists Ordered, Unordered and Nested, Paragraph Indenting
- 4.7 Insertion of Hyperlinks and Bookmarks, Hyperlink Properties
- 4.8 Image Insertion Formatting and Image Properties
- 4.9 Creation of Tables with various Border Formatting
- 4.10 Page Property Settings Title, Background Sound etc.
- 4.11 Headers Footers, Page Numbers, Page and Section Breaks
- 4.12 Creation of HTML forms and related Objects
- 4.13 Frames and Working with Frames.

### **THEORY - III PART B**

#### **1. Tally**

- 1.1 Creating and configuring Company Menus related to Accounts.
- 1.2 Creating, Displaying and altering Groups.
- 1.3 Creating, Displaying and altering Ledgers.
- 1.4 Study of Cost centers. Study of Vouchers and their entries.
- 1.5 Printing Purchase orders, Sales orders and Invoice.
- 1.6 Study of Trial Balance, Balance Sheet and Profit and Loss Account.

#### **2. Portable Document Format Creation using Adobe Acrobat**

- 2.1 Introduction to Adobe Acrobat
- 2.2 Creation of PostScript Files using Adobe Acrobat Distiller
- 2.3 Creation of PDF files using Adobe Acrobat Writer
- 2.4 Font Embedding and document compression options
- 2.5 Links and Bookmarks
- 2.6 Document Security.

#### **3. Adobe PageMaker**

- 3.1 Installation of PageMaker
- 3.2 PageMaker screen, entering text; viewing the PageMaker screen; the keyboard
- 3.3 Tools and Menus
- 3.4 Editing text; undoing changes; text blocks; saving document on disk; printing a document; exiting PageMaker
- 3.5 Preparation of table of contents
- 3.6 Page formatting (columns) - Story editor; highlighting in the editor; showing invisible characters; formatting; returning to the layout; spelling check; selective editing with FIND and REPLACE commands
- 3.7 Use of Logo; customizing text with wrap boundaries; selection of object from a stack; the control palette and text rotating with control palette; folded leaflet document; skewing an object; use of multiple publication windows; use of high resolution photos; proofing the document
- 3.8 Printing of documents and printing to files

## PRACTICAL - III

### PART A

1. Creation of a Simple Three page document in Word, demonstrating the use of various Font Types and Sizes, Text Colors, Formatting, Preset Page Layouts.
2. Creation of a Word Document with Linked and Inserted Images and Image Properties, Tables and Charts.
3. Creation of a Word Document using Embedded Fonts, Bulleted Information, Equations and an Inserted Excel Spreadsheet.
4. Creation of a Simple PowerPoint Presentation using the Wizard.
5. Creation of a PowerPoint Slide Show using a Ready Slide Design Template, with Custom Slide Transition Effects and Other Special Effects.
6. Use of The Pack and Go Wizard to demonstrate a PowerPoint. Presentation on a computer not having PowerPoint installed.
7. Creation of a Spreadsheet using Excel containing a 3 dimensional Pie and Bar Chart.
8. Creation of an Excel Workbook with 2 sheets with Linked information using arithmetic, trigonometric and logical formula relations.
9. Using Excel to with formulae to simulate entries as in a Bank Pass Book with automatic calculation of Balance.
10. Creating Web pages viewed through Frames using Microsoft FrontPage.

**NOTE: Though a list of only ten Experiments has been provided for each paper, students have to perform each of the above experiments with 3 different sets of parameters. A minimum of 25 practicals per paper should be performed.**

## PRACTICAL - III

### PART B

#### Practicals

1. Creation of Groups using Tally
2. Creation of Ledger using Tally
3. Creation of Purchase Order and Sales Order using Tally
4. Creation of an Invoice using Tally
5. Creation of a Company using Tally
6. Conversion of a Word Document/ PowerPoint Presentation into PDF (With and without Images)
7. Conversion of an Adobe PageMaker Document into PDF (with and without Images)
8. Creation of a PDF document with bookmarks/links and Standard Security Features within the same document
9. PageMaker - use of tool box and creation of simple letterhead or identity card of your institute
10. PageMaker - Design of a commercial color newspaper ad related to the exhibition of educational books in the size 2 columns x 10 cm.

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## List of Reference Books

1. Microprocessor, Architecture, Programming and Applications with the 8085-4th Ed -Ramesh Gaonkar - Penram International
2. Networking Essentials MSCE Training Guide - (Techmedia)
3. Networking For Dummies
4. Web Publishing - Jude and Monica D'Souza -TMH
5. MS-Word in Easy Steps - Dreamtech Press
6. MS-Excel in Easy Steps - Dreamtech Press
7. MS-PowerPoint in Easy Steps - Dreamtech Press
8. MS-FrontPage in Easy Steps - Dreamtech Press
9. PageMaker in Easy Steps - Dreamtech Press
10. CorelDraw in Easy Steps - Dreamtech Press
11. Teach Yourself JavaScript in 24 Hours, 2nd Ed.- Michael Moncur, Techmedia-BPB
12. Adobe Acrobat Classroom in a Book, Adobe
13. Financial Accounting on Computers using TALLY , Namrata Agarwal, Dreamtech Press
14. Discover ASP 3.0, - Monica & Jude D'Souza, TMH
15. PC Upgrade & Maintenance Guide - Mark Minasi -BPB SYBEX.

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