

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

1	Name of Course	Certificate Course in Network Technician				
2	Max no. of Students	25	Course Code – 101209 (w.e.f. 2018-19)			
3	Duration	1 year				
4	Course Type	Part Time				
5	No. of Days per week	6 days				
6	No. of hours per day	7 Hrs				
7	Space require	Theory Class Room – 200 sqft Practical Lab – 1000 sqft Total – 1200 Sqft				
8	Entry qualification	S.S.C. Pass				
9	Objective of syllabus	To understand basic computer operation, To understand Networking Technology, To establish and maintain Computer Network. To Establish Internet connection in Network of computer, sharing it etc.				
10	Employment opportunities	work as Network Technician in Networking Services Providing Agencies, company etc, Own Network Technician business, In large organization like Bank etc as Network Technician.				
11	Teachers Qualification	Diploma in Computer Engg, B.C.A. or Equivalent and 2 yr Experience.				
12] Teaching Scheme – Training System Per Week						
		Theory	Practical	Total		
		6 Hrs	18 Hrs	24 Hrs		
13] Examination Scheme –						
Sr	Paper Code	Name of Subject	Theory/ Practical	Hours	Max Marks	Min Marks
1	10120911	Basic Information Technology	Theory - I	3 Hrs	100	35
2	10120912	Networking Technology	Theory – II	3 Hrs	100	35
3	10120913	Business Economics	Theory – III	3 Hrs	100	35
4	10120921	Basic Information Technology	Practical – I	3 Hrs	100	50
5	10120922	Networking Technology	Practical – II	3 Hrs	100	50
6	10120923	Business Economics	Practical - III	3 Hrs	100	50
				Total	600	255

## Basic Information Technology

Theory - I -Basic Information Technology	Practical – I - Basic Information Technology
<b>A] Computer Fundamental</b>	
<b>1] Fundamentals Of Computer</b> Introduction Components of PC The system Unit Front part of system Unit Back part of system Unit CPU Memory of computer Monitor Mouse, Keyboard Disk, Printer, Scanner, Modem, Video, Sound cards, Speakers	<b>List of Practical</b> 1. Working with Windows 2000 desktop ,start icon, taskbar, Recycle Bin, My Computer icon ,The Recycle Bin and deleted files Creating shortcuts on the desktop 2. The Windows 2000 accessories, WordPad – editing an existing document, Use of Paint – drawing tools The Calculator, Clock 3. The Windows Explorer window, concept of drives, folders and files? Folder selection techniques, Switching drives, Folder creation, Moving or copying files, Renaming, Deleting files ,and folders 4. Printing, Installing a printer driver, Setting up a printer, Default and installed printers, Controlling print queues, Viewing installed fonts, The clipboard and ‘drag and drop’, Basic clipboard concepts Linking vs. embedding,
<b>2] Introduction To Windows 2000/Xp</b> Working with window Desktop Components of window Menu bar option Starting window Getting familiar with desktop Moving from one window to another Reverting windows to its previous size Opening task bar buttons into a windows Creating shortcut of program Quitting windows	5. Moving through a Word document menu bar and drop down menus toolbars 6. Entering text into a Word 2000 document, selection techniques Deleting text 7. Font formatting keyboard shortcuts 8. Paragraph formatting Bullets and numbering 9. Page formatting What is page formatting? Page margins Page size and orientation Page breaks, Headers and footers 10. Introducing tables and columns
<b>3] GUI Based Editing, Spreadsheets, Tables &amp; Presentation</b> Application Using MS Office 2000 & Open Office.Org Menus Opening, menus, Toolbars, standard toolbars, formatting toolbars & closing Quitting Document , Editing & designing your document Spreadsheets Working & Manipulating data with Excel Changing the layout Working with simple graphs Presentation Working With PowerPoint and Presentation	11. Printing within Word 2000 Print setup Printing options Print preview 12. Development of application using mail merge Mail merging addresses for envelopes Printing an addressed envelope and letter 13. Creating and using macros in a document 14. Creating and opening workbooks Entering data 15. Navigating in the worksheet Selecting items within Excel 2000 Inserting and deleting cells, rows and column Moving between worksheets, saving worksheet, workbook
<b>4] Introduction To Internet</b> What is Internet Equipment Required for Internet connection Sending &receiving Emails Browsing the WWW Creating own Email Account Internet chatting	16. Formatting and customizing data 17. Formulas, functions and named ranges 18. Creating, manipulating & changing the chart type 19. Printing, Page setup, Margins Sheet printing options, Printing a worksheet 20. * Preparing presentations with Microsoft Power Point. Slides and presentations, Opening an existing presentation , Saving a presentation

<b>5] Usage of Computer System in various Domains</b> Computer application in Offices, books publication data analysis ,accounting , investment, inventory control, graphics, database management, Instrumentation, Airline and railway ticket reservation, robotics, artificial intelligence, military, banks, design and research work, real-time, point of sale terminals, financial transaction terminals.	21. Using the AutoContent wizard ,Starting the AutoContent wizard, Selecting a presentation type within the AutoContent wizard Presentation type Presentation titles, footers and slide number 22. Creating a simple text slide, Selecting a slide layout Manipulating slide information within normal and outline view, Formatting and proofing text, Pictures and backgrounds, drawing toolbar, AutoShapes, Using clipart, Selecting objects, Grouping and un-grouping objects, The format painter
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Theory	Practical
	23. Creating and running a slide show, Navigating through a slide show, Slide show transitions, Slide show timings. Animation effects 24. Microsoft Internet Explorer 5 & the Internet Connecting to the Internet The Internet Explorer program window, The on-line web tutorial Using hyper links, Responding to an email link on a web page 25. Searching the Internet, Searching the web via Microsoft Internet Explorer, Searching the Internet using Web Crawler, Searching the Internet using Yahoo, Commonly used search engines
<b>6] Information technology for benefits of community</b> Impact of computer on society Social responsibilities Applications of IT Impact of IT Ethics and information technology Future with information technology	26. Favorites, security & customizing Explorer Organizing Favorite web sites Customizing options – general, security, contents, connection, programs, advanced 27. * Using the Address Book Adding a new contact Creating a mailing group, Addressing a message, Finding an e-mail address 28. Using electronic mail, Starting Outlook Express Using the Outlook Express window, Changing the window layout, Reading file attachment, Taking action on message-deleting, forwarding, replying 29. Email & newsgroups, Creating and sending emails Attached files, Receiving emails, Locating and subscribing to newsgroups, Posting a message to a newsgroup 30. Chatting on internet, Understating Microsoft chat environment, Chat toolbar

## **List of Books**

### **Computer Fundamental**

- 1] Vikas Gupta Comdex Computer Course Kit First Dreamtech
- 2] Henry Lucas Information Technology for management 7Th Tata Mc-Graw Hills
- 3] B.Ram Computer Fundamentals Architecture and Organisation Revised 3<sup>rd</sup> New Age International Publisher

## **List of Tools and Equipment**

### **A] General Class room**

<b>Sr</b>	<b>Name of Item</b>	<b>No.</b>
1	Steel lockers 8 compartments with individual lockers (1980 x 910 x 480 mm)	4
2	Chair with writing pad	25
3	Steel almari with self 6.5' x 3' (18 gauge)	2
4	Steel table 4' x 3'	2
5	Teacher chair	2

### **B] For Computer Fundamental and CAD Practical**

<b>Sr</b>	<b>Name of Item</b>	<b>No.</b>
1	Computer System P4 with accessories Complete with license OS. compatible for- to run AutoCAD 2010 and Windows 7 OS.	5+1
2	Plotter- HP Design Jet 500 latest model	1
3	Scanner	1
4	Computer table	5+2
5	Chair for computer	10+2
6	Laser Printer	1
7	M. S. Office Software	1

## “Networking Technology”

<b>Theory - II - Networking Technology</b>	<b>Practical - II - Networking Technology</b>
<p>Visit to different sections of the Institute.            Safety precautions, Electrical Safety.            Demonstration and operation of Fire Extinguishers. Demonstration of Artificial Respiration</p>	<p>Familiarisation with the Institute.            Accidents, Safety precautions, Electrical safety. Types of fire extinguishers.            Artificial Respiration.</p>
<p>Visit to establishments with general purpose and special purpose computers. Visit to Computer centers installed with Mini and Micro computers.            Familiarisation with different type of Computers.</p>	<p>Basic definition of computer, features and applications, hardware, software, firmware and live ware. Data, Information, data types, physical &amp; logical concepts of data. Representation of information inside a computer - Bit, byte, kilobyte, megabyte and gigabyte. Generation of Computers – Classification of computers according to purpose (general and special purpose), according to working (analog, digital and hybrid), according to processing capability (Super, mainframe, mini, micro, laptop and palmtop).</p>
<p>Identification of different peripheral devices. Connecting and dismantling cords, cables and peripheral devices.            Identifying and handling of different types of Floppies and CDs.            Understanding the keys and their functions in keyboard.            Keyboard operation and practicing mouse.</p>	<p>Block diagram of a Computer system.            Standard and common input/output devices.            Processing unit – CPU, ALU, CU            Memory unit – Primary and Secondary memory. Concept of Virtual memory.            Semiconductor memories such as RAM, ROM, PROM, EPROM, EEPROM.            Dynamic and Static RAM. L1 and L2 Cache Memories.            Buses – Control bus, Address bus and Data bus.            Secondary storage devices – magnetic tapes, floppy disk, hard disk, CDs and DVDs.</p>
<p>Booting the computer under DOS and Windows.            Using different computer peripherals.            Self-test for different Printers.            Keyboard and mouse practice.</p>	<p>of printers, scanners, mouse, cameras, bar code readers etc.            Power On Self Test (POST).            Booting – booting sequence, cold booting and warm booting. Booting files and their functions. Concept of LILO boot.            Storage &amp; retrieval of data – concept of tracks, sectors, blocks, cylinders, boot record, disk partitions, Master Boot Record (MBR and File Allocation Tables (FAT).            Types of software – system software &amp; application software. Functions of operating system, interpreter, compiler and assembler.</p>

Introduction to Windows – The user Interface, Using Mouse, Status Bar, Start, Menus, Running Applications, My Computer, Recycle Bin, Windows Explorer, Creating, Renaming, Copying & Moving files and folders. Using Help. Windows Settings – Control Panel, Setting Wall paper, Screen Savers, Date, Time, Sounds, Task bar and Start Menu. Using right mouse button.	MS Windows –Starting windows and their operations. File management through Windows explorer. Display properties, sound properties different screen savers, and font management. Installation of programs. Setting, using and applications of control panel.
Advanced Windows – Creating shortcuts & folders. Using Accessories, Adding & Removing Components of Windows, Formatting a Floppy.	Applications of essential accessories such as notepad, WordPad, paintbrush, images, calculator, calendar, media players and sounds. Multimedia.
Practice of Basic DOS commands for File /Directory manipulations, Copying and Moving and File/Directory manipulations.	Basic DOS – Comparison of DOS & Windows, Switching between DOS & Windows. Basic DOS commands for File /Directory manipulations, Copying of Files & Disks, Delete/Undelete.
Motherboard – Study of different Buses, Processor sockets and RAM sockets on Motherboards. Identification of different types of RAM and their sockets. Programming and resetting CMOS and making front panel connections. Replacing BIOS and battery. Identification of different types of RAM and their sockets. Installing and extending RAM.	Computer hardware – Different type of Motherboards, on-board features, form factors. Different type of Buses – ISA, EISA, VESA, MCA and PCI. Different type of Processors, sockets, RAMs their features, capacities, frequency and advantages. Functions of I/O Ports and Motherboard BIOS.
Expansion Cards - Identification, checking and installing of AGP and different expansion cards commonly used. Installation and checking of Network Interface Card (NIC). Installing Floppy drives, Hard Disks and CD Drives. Partitioning and formatting of Hard Disks. Master/Slave configuration of Hard disks and CD Drives.	Function and features of different add on cards, Display cards, AGP and NIC. Different types of floppy drive, Hard Disks and CD Drives and their connections. DOS - different versions, advantages, features and applications. Windows - different versions, advantages, features and applications of windows.
Installation of Operating Systems – DOS, Windows95/98/ME and Unix/Linux.	Introduction to Computer Networks – Advantages of Networking, Peer-to-Peer and Client/Server Network. Network Topologies – Star, Ring, Bus, Tree, Mesh, Hybrid. Type of Networks – Local Area Networks (LAN), Metropolitan Area Networks (MAN), Wide Area Networks (WAN) and Internet.
Installing & Configuring a Peer-to-Peer Network using Windows Software. Making cables,	Communication Media & Connectors Unshielded twisted-pair (UTP), shielded twisted-pair (STP) and coaxial cable: RJ-45, RJ-11, BNC. Crimping and making cables.
Installing & Configuring Windows 2000 Server.	Introduction to Data Communication – Analog and Digital Signals, Simplex, Half-Duplex and Full-Duplex transmission mode.

Installing & Configuring Novell Netware Server.	Network Components – Modems, Hubs, Bridges, Routers, Gateways, Repeaters, Transceivers, Switches etc. – their functions, advantages and applications.
Structured cabling and using I/O Box. Setting up Nodes	OSI Model - The functions of different layers in OSI model.
Physically connecting and running the Network. Troubleshooting the Network.	Data transmission in the OSI Model. Protocols IPX/SPX. Troubleshooting the Network.
Configuring Print Server. Network Administration Functions. Identification and using the Network components. Cascading Hubs.	Ethernet operation. Ethernet characteristics. Ethernet cabling and components – Thick Net, Thin Net and 10 Base T. Limitations and Advantages of Ethernet.
Exposure and using Internet.	Internet – Architecture and History. The Internet Architecture Board. Various Applications of Internet.
Installing and Configuring Internet Connection on a PC using PSTN.	TCP Transmission Policy, and Congestion Control.
Installing and Configuring Internet Connection on a PC using ISDN.	TCP/IP Reference Model – Different layers and their functions. Comparison of the OSI and TCP Reference Models.
Installing and Configuring Internet Connection on a PC using ISDN. Installing Proxy Server. Setting E-mail accounts.	Simple Mail Transfer Protocol (SMTP), Telnet, File Transfer Protocol (FTP), Hyper Text Transfer Protocol (HTTP), Simple Network Management Protocol (SNMP).

### **Theory - III and Practical – III - BUSINESS ECONOMICS**

Basic Concepts in Economics and Finance (e.g. Assets – Liabilities, Expenses – Income, Depreciation, Cash Vs. Mercantile Accounting etc.

#### **COST ACCOUNTANCY**

Introduction, Cost Accounting And Financial Accounting, Concept of Cost Center, Special Types of Cost, Installation of Costing System

**ELEMENTS OF COSTS** Overheads, Cost Sheets/Costs Statement.

**MATERIAL COST** Procurement of Materials, Overstocking May have Following Consequences, Understocking May have Following Consequences, Section of Source of Supply, Comparative Statements, Discrepancies in Material Receipts, Excess Quantity Accepted, Excess Quantity Returned, Proper Conduct of Storage Function, Bin Card, Stores Ledger, Bin Card Vs. Stores Ledger, Reconciliation of Bin Card and Stores Ledger, Valuation of Material Movements, Treatment of Shortages, Inventory Control, Techniques of Inventory Control, Calculation of Various Levels

## **LABOUR COST**

Time Keeping, Methods of Time Keeping, Time Booking, Reconciliation of Time Attended and Time Booked, Methods of Remunerating the Workers, Principles of Goods Wage Payment Systems, Comparative Study of Halsey and Rowan System, Important Terms in Cases of Labour Cost, Causes of Labour Turnover, Measurement of Labor Turnover, Calculation of Labour Turnover, Treatment of Idle Time Cost

## **OVERHEAD COST**

Procedure for Charging the Overheads, Actual Vs. Predetermined Overheads ABQorption Rates, Under ABQorption or Open ABQorption of Overheads, Treatment of Under or Over ABQorbed Overheads, Control Over Overheads, Ot her Factory Overheads.

## **SPECIAL TYPES OF COSTS**

### **PART I – DEPRECIATION**

Need for Depreciation Accounting ,Methods for Calculating Depreciation, Practical Consideration Relating to Depreciation

### **PART II – OBQOLESCENCE**

Control Over OBQolescence

### **PART III – MATERIAL LOSSES:**

Accounting and control, Waste, Scrap, Spoilage, Defectives

## **METHODS OF COSTING**

Job Costing, Batch Costing, Contract Costing, Process Costing, Operation Costing, Output Costing, Operating Costing

Role Of Product Management In Marketing And Its Interface With Other Corporate Functions

Conceptual issues- Branding, Market Segmentation, Positioning & Differentiation Strategies, New Product Planning, Distribution Channels: Structure and Strategy, Advertising Planning

Distinctive Aspects of Services Marketing, Developing Frameworks for Analyzing Services, The Customer Experience

Positioning a Service in the Marketplace, Targeting Customers and Building Relationships, Managing Demand

Creating and Delivering Services, Adding Value to Core Products with Supplementary Services, Understanding Costs and Developing Pricing Strategies

Communicating and Promoting Services, Enhancing Value by Improving Quality and Productivity, Developing and Managing the Customer-Service Function

Organizing and Implementing the Marketing Effort, Globalizing Services Marketing

Planning and designing sales promotion program with specific reference to sales contest, trade-in discount, coupons etc.

Brand building including brand image, positioning, brand valuation and measurement of brand equity.

Link between mr and advertising planning the communication process and the feedback loop. Influence of the environment on advertising planning.

Promotion budgeting dividing the budget into advertising and sales promotion activities on the basis of the nature of the product (fmcg, durables, industrial products and services) and the product life cycle.

### Books

B.K.Bhar Cost Accounting Academic Publishers, Calcutta  
 Khan Jain Cost Accounting Tata McGraw Hill  
 Product Management Majumdar Prentice Hall  
 Product Strategy and Management Baker, M & Hart S Prentice Hall  
 Product Management Donald R. Lehmann, Russell S. Winer  
 Service Marketing Nirgudkar Tata Mc Graw Hill  
 Service Marketing E Rampal & Gupta Galgotia  
 Product Management Chunawala Himalaya  
 Product Management Gupta Wisdom  
 Service Marketing Valarie A Zeithaml Tata Mc Graw Hill  
 Strategic Brand Management Keller Pearson  
 Building Strong Brands D.A. Aker --  
 Successful Branding Pran K. Choudary --  
 Advertising Chunawala and Sethia Himalaya  
 Advertising Management David Aker Prentice Hall  
 Brand Positioning Subroto Sen Gupta Tata Mc Graw Hill

### LIST OF TOOL & EQUIPMENT FOR NETWORKING TECHNOLOGY

Sl. No.	Item Name, Description & Specification	Quantity
<b>HARDWARE</b>		
1	Intel Pentium IV Processor, 2 GHz, 512 MB RAM, 40 GB HDD, 3.5" FDD, 52 x CD Drive, Ethernet card 10/100 Mbps, 15" SVGA Colour Monitor with 32 MB Graphic Adopter, 3 button Mouse, 105 keys keyboard, or higher. <i>(8 PCs should be used for Hardware Training &amp; Installation and rest to be used for Software Installation)</i> OR Higher	05 Nos.
2	Network Terminator (NT1)	1 No.
3	Terminal Adapter (TA)	1 No.
4	Laser Printer (One should be Network Printer)	2 Nos.
5	Inkjet Printer	1 No.
6	Different Expansion Cards	1 each
7	16 port Hub	1 No.
8	UPS 1 KVA	2 Nos.
9	Air Conditioner 1.5 tonne.	2 Nos.
10	Modem (Internal & External)	2 Nos. each
11	ISDN line (For Internet)	1 No.
12	Telephone Line	1 No.
13	CD Writer	2 Nos.
14	Network Interface Card (Ethernet Card 10/100Mbps)	4 Nos.
15	Fire extinguisher	1 No.
16	Vacuum Cleaner	1 No.
<b>SOFTWARE</b>		
1	Netware Software with multi user license (Latest version)	1 No.
2	Microsoft Windows 2000 Server with multi user license or Latest	1 No.
3	Windows (XP) or Latest (multi User license)	1 No.
4	DOS 6.22 or Latest	1 No.

MATERIAL		
1.	Connectors – BNC, T-Connector, Terminator, RJ-45.	
2.	Cables – CAT-5, CAT-6, Thicknet, Thinnet, Co-axial Cable, Ferrules	
3.	Patch Panel and I/O Box	
4.	Floppy Disks, CDs	
5.	Isopropyl Alcohol, Floppy Disk Drive Cleaning Kits, CD Lens Cleaning Kits.	
FURNITURE		
1	Computer Tables with Chairs/stools	05 Nos.
2	Printer Tables	2 Nos.
3	Instructor Table	1 No.
4	Instructor’s Chair	1 No.
5	Cabinet with drawer	2 Nos.
6	Students Lockers (steel) unit of 8 lockers	2 Nos.
7	Steel Almirah big size	1 No.
8	Steel Almirah small size	2 Nos.
9	Class room chairs with writing pad molded type	25 Nos.
10	4-Unit Rack for installation of Patch Panel, Hubs etc.	2 Nos.
STUDENTS TOOL KIT		
1.	Screwdriver Set of min. 5 bits (Combination of star & minus) + 1 ext. rod	1 No.
2.	Crimping Tool for BNC and RJ-45 connectors	1 No.
3.	Punching Tool	1 No.

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