MAHARASHTRA STATE BOARD OF VOCATIONAL EDUCATION EXAMINATION, MUMBAI - 51

<table>
<tr><td>1</td><td>Name of Syllabus</td><td>Certificate course in P.C. Maintenance (301103) (w.e.f.2018-19)</td></tr>
<tr><td>2</td><td>Max.Nos of Student</td><td>25 Students</td></tr>
<tr><td>3</td><td>Duration</td><td>6 Month</td></tr>
<tr><td>4</td><td>Type</td><td>Part Time</td></tr>
<tr><td>5</td><td>Nos Of Days / Week</td><td>6 days (42 Hrs / week)</td></tr>
<tr><td>6</td><td>Nos Of Hours /Days</td><td>7 hrs.</td></tr>
<tr><td>7</td><td>Space Required</td><td>1) Workshop = 200 sq feet
2) Class Room = 200 sq feet

TOTAL = 400 sq feet</td></tr>
<tr><td>8</td><td>Entry Qualification</td><td>S.S.C. Appeared</td></tr>
<tr><td>9</td><td>Objective Of Syllabus/ introduction</td><td>To prepare a student to –
(1) Explain operations of PC system.
(2) Installation and Up gradation of PC systems.
(3) Preventive maintenance of PC
(4) Care Level Fault diagnosis in PC
This course will enable students to do installation, preventive maintenance and card level servicing of PCs as well as Microcomputer based Industrial Hardware Systems.</td></tr>
<tr><td>10</td><td>Employment Opportunity</td><td>Self Employment / May get job in Establishment</td></tr>
<tr><td>11</td><td>Teacher’s Qualification</td><td>For Lecturer :- Diploma in computer Hardware
For Instructor :- Diploma in Computer Hardware</td></tr>
<tr><td>12</td><td>Training System</td><td>Training System Per Week
<table>
<tr><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>6 hrs</td><td>18 hrs</td><td>24 hrs</td></tr>
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<tr><td>13</td><td>Exam. System</td><td>
<table>
<tr><th>Sr. No.</th><th>Paper Code</th><th>Name of Subject</th><th>TH/PR</th><th>Hours</th><th>Max. Marks</th><th>Mini. Marks</th></tr>
<tr><td>1</td><td>30110311</td><td>Computer & peripheral Devices</td><td>TH-I</td><td>3 Hrs</td><td>100</td><td>35</td></tr>
<tr><td>2</td><td>30110312</td><td>Computer Operating System & Maintenance</td><td>TH-II</td><td>3 Hrs</td><td>100</td><td>35</td></tr>
<tr><td>3</td><td>30110321</td><td>Computer & peripheral Devices</td><td>PR-I</td><td>3 Hrs</td><td>100</td><td>50</td></tr>
<tr><td>4</td><td>30110322</td><td>Computer Operating System & Maintenance</td><td>PR-II</td><td>3 Hrs</td><td>100</td><td>50</td></tr>
<tr><td></td><td></td><td>TOTAL</td><td></td><td></td><td>400</td><td>170</td></tr>
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SYLLABUS

THEORY I Computer & peripheral Devices (100 MARKS/3 Hrs.)

No	Topic
01	BLOCK DIAGRAM OF PC SYSTEM Block diagram of personal computer system. Difference between PC, PC XT, PC AT. Study of different input, connectors, slots & cables. Study of PC – AT SYSTEM
02	STUDY JOB MOTHERBOARDS Types Layout of typical PC – AT motherboards (Pentium & onwards)
03	STUDY OF CPU CPU specifications (General) - Data Bus Internal Registers, Address Bus CPU Speed ratings.
04	BUS SLOTS Types of BUS Processor Bus, Memory Bus Address Bus. Need of expansion slots Types of I/O Buses ISA Bus EISA Bus. System Resources I/O port Addresses, Interrupts (IRQ s) DMA, channels Memory. Resolving Resource Conflicts manually, using a system – Configuring Template, Special Boards, Plug & Play systems.
05	PC-AT ADD ON CARDS Study & installation of Video cards. Multimedia video cards, Sound Blaster card, Modem Cards Setting of DMA channels, IEQs I/O address.
06	VIDEO DISPLAT UNIT Study & installation of VDU, Classification of monitors as per type of input resolution Introduction to LCD Plasma monitors.
07	PRINTER (DOT MATRIX INKJET LASER) Study & Installation of printer, Classification of printers as per printing technique printing sequence print quality, Mechanism printer interface, Print direction interconnection of printer to PC (Centronics interface) Installation of Printer & sharing switch.
08	FLOPPY DISK DRIVE Organization of floppy, Classification as per Physical size, Density Capacity, Formatting of Floppy disk Layout of 5.24" & 3.5" floppy disk drive. Different motors sensors R/W Head assembly, Jumpers Installation of FDD.
09	HARD DISK DRIVE Classification as per Physical size Storage Capacity, Type of interface used Mechanism or Organization of HDD Hard disk installation procedure Controller configuration Physical installation System configuration Low level format Partitioning, High level Formatting using DOS win 98 Formatting using Advanced Disk management software Disk Hardware & Software limitation – Disk interface capacity limitations ROM BIOS capacity limitations O/S limitations.
10	KEYBOARD / MOUSE Classification as per on of keys Layout of keys Types of keys used Different types of key switches, Interconnection of keyboard of pc (5 pin socket) physical layout/ mechanism, interface of mouse installation of mouse.
11	SWITCH MODE POWER SUPPLY, UPS SERVO STABILISER Different connectors rating testing of SMPS. Concept of UPS & installation concept of servo stabilizer s& installation
12	CDROM DRIVE Study of installation of CDROM drive.

13 ADVANCED PERIPHERAL DEVICES (No theory question expected)
Introduction to MODEM Taoe Drives, Scanner Plotter CD Writer ZIP drive.

14 MEMORY
Concept of conventional (base) memory.
Extended memory – Extended memory management drivers Himem sys, Memmaker
Cache memory – Need Types installation.

PRACTICAL – I Computer & peripheral Devices (100 MARKS/3 Hrs.)

1.	Study of analog and digital multimeters.	02
2.	Study of different passive components	01
3.	Study of different active components.	01
4.	Study if physical layout of PC- AT system	01
5.	Study of motherboards, configuring memory on board BUS slots.	02
6.	Installation of VGA/SVGA monitor.	01
7.	Study & Installations of SMPS.	01
8.	Study & Installations of UPS.	01
9.	Study & Installations of Keyboard.	02
10.	Study & Installations of of Mouse.	02
11.	Study & Installations of Printer & Self test.	03
12.	Study & Installations of printer share switch.	01
13.	Study & Installations of of add- on cards.	04
14.	Study of Floppy disks .	01
15.	Study & Installations & testing of Floppy disk drives.	02

THEORY II Computer Operating System & Maintenance (100 MARKS/3 Hrs.)

15 STUDY OF OPERATING SYSTEMS
Dos booting sequences, System files, DOS disk structure
Commonly used DOS commands – Internal commands.
External commands – Chkdsk,Defrag, Disk comp, Doskey, Edit, Label, Mem, Modem More Move MS Backup, Restore Scandisk, Share, Tree, Undelete, Copy, Help, Attrib, Memmaker, MSCDEX, Deletree Loadfix, Format, Sys, Fdiskm Debug, Disk copy.

16 SYSTEM UPGRADATION
Purpose of up gradation increasing system memory CPU unpgradation Upgrading HDDs Upgrading Video System, Optimizing Systems Performance Using Condig.sys & Autoexec.bat Upgrading OS, and Installation of new software on DOS & WINDOWS platforms.

17 SYSTEM PREVENTING MAINTENANCE
Standerq preventive maintenance procedure.
Preventive Maintenance of CPU, FDD, Hard disk, Keyboard, Mouse, CD- Rom, Different Backup Techniques (MS-Backup, Win ZIP)

18 HARDWARE DIAGNOSTICS
Common hardware problems with Motherboard, Memory, Add on Cards CPU, FDD, Hard Disk , Keyboard, Mouse, CD- Rom drive & there diagnosis (faults at card level only)

19 INTRODUCTION TO SOFTWARE DIAGNOSTIC TOOLS
POST, POST sequence, POST audios & visual error codes INTRODUCTION TO –

Diagnostic Software – AMIBIOS, DIAG, AT DIAG, QA PLUS/EF, CHECKIT, DEBUG.
Disk Diagnostics – Disk manager, NORTON utility PC TOOLS, WINDOWS, Diag S/W.

20 VIRUSES & VACCINES
Introduction of Viruses Installation of antivirus.

21 INTRODUCTION TO COMMUNICATIONS & NETWORKING

PRACTICAL – II Computer Operating System & Maintenance (100 MARKS/3 Hrs)

1. Hard disk installation – formatting & partitioning. 02
2. Study & Installations of CD ROM drive. 12
3. Study & Installations of operating systems – Dos, Windows 9X Windows Millennium. As Reqd .
4. Study of different backup techniques. 01
5. Study of routines checks of PC/ Preventive maintenance. 20
6. Hardware & Software diagnosis of completes PC system As Red (Fault finding at card level)
7. Installation Antivirus software. As Reqd
8. Study of PC Diagnostic software. As Reqd

LIST OF TOOLS & EQUIPMENTS:-

Sr. No.	Description of Tools / Equipments	No. Required
1.	PI, PII, PIII (any on e of them, Intel-celadon, PIV, PIV-HT etc or AMD Athlow & Duron Each how	03 02
2.	8085 Microprocessor kit.	02
3.	Spare set of Mother board / VGA, SVGA	1 set
4.	Spare set of floppy Drive/Keyboard and monitor CD, ROM Drive, DVD Drive, CD writer, Scanner, web camera, pen Drive.	1 set
5.	Printer (Dot Matrix) 80 column / Ink Jet, Lazar.	1 each
6.	Printer sharing Switch	1
7.	Oscilloscope (15 MHz Single Trace)	1
8.	Digital Multimeter.	2
9.	Analogue multimeter (High Sensitivity)	2
10.	Logic Probe	2
11.	Software Packages and Diagnostic Software (Refer Practical List)	1 each
12.	Electronic Technicians tool kit Screwdriver Pliers, Cutters, Soldering, Iron, Solder wire, Twisters etc.)	1 set
13.	Floppy head cleaning diskette	1
14.	Switch cleaning / PCB cleaning solutions.	--
15.	Experiments as per practical list.	1 each
16.	Colour Monitor	1 optional
17.	UPS system / servo Stabilizer.	1 optional
18.	LAN Installation	1 optional
19.	External / Internal Modem	1
20.	Un assembled computer	1

PREFERENCE BOOKS :-

1)	Transistor Circuit Approximations	Malvino
2)	Op-Amp & Linear Integrated Circuits	R. Gayakwad
3)	Digital principles & Application	Malvind & Leach
4)	Digital computer Electronics	Malvind & Leach
5)	0000 To 8085	Sreedhar & Ghosh
6)	Microprocessor Architecture Programming And Application	Ramesh Goankar
7)	Ibm PC and Clones (Second Edition)	Govindrajalu
8)	Upgrading and Repairing PCs (Fourth Edition)	Sott Mueller
9)	Complete PC Upgrade & Maintenance Guide (2003 Edition)	Mark Minasi
10)	PC Hardware A Beginner's Guide	Ron Glister
11)	Modern Computer Hardware Course	Manohar Lotia
12)	Modern All About Key Board And Mouse	Manohar Lotia
13)	Modern All About Printers	Manohar Lotia
14)	All About Mother Board (Second Edition)	Manohar Lotia
15)	Modern All About Hard Disk	Manohar Lotia
16)	The Complete PC Upgrade & Maintenance Lab Manual	Richard Mansfield
17)	Hardware Bible	Winn L. Rosch.