सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
DEVELOPMENT COMMISSIONER
MINISTRY OF MICRO, SMALL & MEDIUM ENTERPRISES
MSME TECHNOLOGY CENTRE

MODEL CURRICULUM

Qualification Name:

Technician - Computer Hardware & Network Management

Qualification Code:

Version: 2.0

NSQF Level: 4.5

Model Curriculum Version: 2.0

Submitted By:

MSME TECHNOLOGY CENTRE

O/o DC MSME, Ministry of Micro, Small and Medium Enterprises

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COURSES / MODULE TEMPLATE

NOS /Module: Prepare Testing & Maintenance of Power Supply-SMPS

NOS /Module Code: MSME/ADCHNM/01

Outcomes:

After completion of course Student should be able to:

- Understand how to measurement of the various electronics components and fault finding.
- Knowledge about to soldering and di-soldering electronics equipment.
- Understand the work of SMPS and procedure to troubleshoot.
- Knowledge about how to fix and remove an electronic component from SMPS.
- Demonstrate the Voltage testing in the output connector of SMPS.

Theory Hours: 30 **Practical Hours: - 50** **Theory Marks: 100** **Practical Marks: -100**

Unit No.	**Unit Name**	**Unit Level Outcomes**	**Contents (Chapters/Topics)**	**TH & PR Hours**	**TH & PR Marks**
UNIT-I	Multimeter & Tools	After completion of unit Student should be able to • Understand the importance of Multimeter and measurement of Voltage, Current, and Resistance. • Understand AC /DC Voltage & Amperage • Understand to Fix & Remove electronic component	Introduction the use of Multimeter - Multimeter Types, Working & Its Applications, Identification of Different terminal, Testing procedure of V, I, R. Identification of tools and its function, use of Soldering Iron, Soldering Stand, De-soldering Pump, Soldering Wick, Solder, Flux, Tweezer & File	**20**	**70**
UNIT-II	Electronic Component	After completion of unit Student should be able to • Understand Resistance in Ohms, Capacity in Farads, Inductance Henrys • Identification & Connection of Electronics components • Evaluate Testing Procedure & Calculation • Explain various Components and its functions • Identify of Terminals & its use	Introduction about Basic Electronic Components – Types, Functions, Symbols, Passive and Active Components, Fuse, Thermistor, Resistor, Diode, Capacitor, Inductor, Transistor, IC (Integrated Circuit)	**30**	**70**

UNIT-III	SMPS (Switch Mode Power Supply)	After completion of unit Student should be able to • Explain Types of power supply & Use of power supply • Demonstrate and explain different section of SMPS & Functions • Explain the Circuit Diagram of all Section • Understand tracing of all Section & Component used in different section of SMPS • Explain Testing of different section, detection of fault & Troubleshoot the fault. • Demonstrate the Voltage testing in the output connector of SMPS	Introduction and importance of Working principles of SMPS -Types of power supply, Block diagram of SMPS, Input section of SMPS, Switching Section of SMPS, Output Section of SMPS, Driver Section of SMPS, Oscillator Section Of SMPS, Standby Section of SMPS, Fault-finding & Troubleshooting, Voltage Testing.	**30**	**60**

COURSES / MODULE TEMPLATE

NOS /Module: Assembly of PC Architecture & their Troubleshooting

NOS /Module Code: MSME/ADCHNM/02

Outcomes:

After completion of course Student should be able to:

- Understand the function of hardware peripherals of computer system, Laptop and procedure to troubleshoot the common issues.
- Identify the peripheral equipment and connecting procedure.
- Understand to fix and replace faulty modules.
- Knowledge to upgrade newly hardware and their maintenance process.
- Knowledge to easily adopt new technology and their function with features.
- Identify fault and their troubleshooting methods, Understand use of diagnostic tools.

THEORY HOURS: - NA PRACTICAL HOURS: - 80 THEORY MARKS: -NA PRACTICAL MARKS:-100

Unit No.	**Unit Name**	**Unit level outcomes**	**Contents (chapters/topics)**	**PR hours**	**PR Marks**
UNIT-I	Micro Processor	After completion of unit Student should be able to • Identify different types of Microprocessor • Identify different Generation, Frequency & Anatomy of Microprocessor	Introduction to microprocessor technology and importance - Types of Microprocessor, different units of microprocessor and it's function, Causes and symptoms of failure of microprocessor	**10**	**10**
UNIT-II	Mother Board	After completion of unit Student should be able to • Identify different types of mother board & form factors • Understand Use & Install of add-on card • Identify different types of ports & slots • Identify the Chips of Motherboard components	Description the Features of Motherboard: Motherboard form factors & components, Different types of motherboard, various types of add-on cards, types of ports & Slots in motherboard, available chips in Motherboard.	**10**	**10**
UNIT-III	Memory	After completion of unit Student should be able to • Explain about primary memory and it's important. • Identify all types of RAM • Understand about ROM and it's used	Introduction about the types of computer memory - Characteristics of Main Memory, Different Types of memory, Identify the memory and its storage capacity and connecting procedures, Fault	**10**	**10**

		in computer system.	Finding & Solutions. Discuss about ROM and its use in computer, Use of Static RAM, Dynamic RAM, SDRAM, DDRSDRAM, ROM, PROM, EEPROM, and Virtual Memory.		
UNIT-IV	Storage Devices	After completion of unit Student should be able to • Understand about secondary storage devices and storage methods. • Knowledge about HDD / SSD types, form factor of size & storage capacity. • Explain the physical and logical technology used to read and write the data in HDD/ SSD. • Understand Troubleshooting and error finding solutions. • Explain about optical storage drive and disc. (Like CDD/DVD/BRD etc.) • Working principle of LASER assembly and burning technology. • Understand Limitation of storage devices, backup process & Flash drive use.	Introduction about the types of computer secondary memory – Types of secondary Memory and its uses, Explain about HDD,SSD and its mechanism units, Types of HDD & SSD, discuss HDD read /writing technics and storage method. Identify and discuss about Optical disc and drive, Difference between CDD, DVD, BRD & DL, and Working Process of LASER Assembly, Discuss about Flash drive and its important,	**10**	**20**
UNIT-V	Input Devices	After completion of unit Student should be able to • Knowledge about different Input Devices & Functions • Identify the Types of Key board & working principle of Keyboard • Identify types of Mouse & Understand the mechanism of Mouse • Demonstrate the common Problems in Key board and mouse • Explain the proper use of Joy Stick, Light pen, Track Ball, Scanner, Graphic Tablet, Microphone, Bar Code Reader.	Use of important computer input devices and functions , use of Keyboard , Mouse, Joy Stick, Light pen, Track Ball, Scanner, Graphic Tablet, Microphone, Bar Code Reader.	**15**	**15**

UNIT-VI	Output Devices	After completion of unit Student should be able to • Identify different type of Monitor, its features & functions. • Assembly and dis-assembly of different Monitor • Understand types of printer • Identify the components of Printer • Explain Printing technology of different printer • Assembly and dis-assembly of Printer & Projector.	• Introduction to output devices – it's important and use, Types of Output devices & their functions, Monitor (CRT, LCD, LED), Assembly and dis-assembly of display units, Printer (Impact Printer, Non-impact printers), Projector.	**15**	**15**
UNIT-VII	Hardware Troubleshoot	After completion of unit Student should be able to • Demonstrate Remove, repair and replace faulty RAM, hard disk or video/graphic card. • Clean dusts from RAM and Video carts slot/ports and from cooling fan. • Knowledge to tightening cable and jumpers on motherboard and/or components. • Understand the Hardware Troubleshooting of PC & Laptop • Solve the RAM Problem beep and blue screen errors, • Knowledge about BIOS set-up Utility • Understand to remove the BIOS Password through Jumper. • Knowledge to solve the Keyboard and Mouse Problem • Identify fault and their troubleshooting methods, Understand use of diagnostic tools.	Definition of troubleshooting , troubleshooting process, identify the problem, computer hardware maintenance, types of maintenance, Preventive measures, hardware diagnostic & troubleshooting tools .	**10**	**20**

COURSES / MODULE TEMPLATE

NOS /Module: Installing System Software & their Maintenance

NOS /Module Code: MSME/ADCHNM/03

Outcomes:

After completion of course Student should be able to:

- Understand about software and its uses
- Knowledge about how to install various type of OS software
- Trace out various software loop falls and troubleshooting.
- Understand OS Missing issue, Blue Screen errors and resolving the issue.
- Explain about disk management tools, driver software and manage antivirus software
- Understand about data backup and security Process.
- Know about Microsoft packages (Word, Excel, PowerPoint)
- Able to create Resume, CV, and Invitation card.
- Able to create Mark sheet, Attendance sheet, and Salary sheet.
- Knowledge to create a Presentation & Animated documents.
- Software Troubleshooting tools and error finding.

THEORY HOURS: -NA PRACTICAL HOURS: 80 THEORY MARKS: -NA RACTICAL MARKS: 100

Unit No.	**Unit Name**	**Unit Level Outcomes**	**Contents (Chapters/Topics)**	**PR hours**	**PR Marks**
Unit-I	OS (Operating System) Installation	After completion of unit Student should be able to • Explain BIOS Function & Features. • Understand about installation of software OS. • Knowledge about Partition concept of hard disk and their limitation. • Understand Hardware Support and compatible with various operating systems • Knowledge about Application Software and utility software. • Software Troubleshooting tools and error finding. • Understand OS Missing issue, Blue Screen errors and resolving the issue.	Introduction about software and important of use- BIOS Setup & boot Process, Process of Partitioning & Formatting of the HDD, File System and it's types , Various Windows OS Installation steps and features, Driver Loading or Utility Software loading, different bundle of Application Software setup, Software troubleshooting & error find solutions, Software troubleshooting tools and use.	**60**	**70**

Unit-II	Microsoft Office Package & Utility Software	After completion of unit Student should be able to • Understand MS-Office Software Setup. • Knowledge of word processing tools, various menu, document format style and settings. • Able to create CV and Resume • Knowledge about Spreadsheet database • Explain Program skill to manage the report, Chart with various functions to utilize on related field. • Able to create Mark sheet, Attendance sheet, and Salary sheet. • Knowledge to create a Presentation & Animated documents. • Able to create Power Point program to setup the slide, design, layout and themes on organize way. • Explain about disk management tools, driver software and manage antivirus software.	Introduction about MS- Office software, installation and its use, Use of MS- Word, MS- Excel and MS- Power Point, Install Different Types of Utility Software, Disk Management Tools, Disk Defragmenter, Backup Utility, setup Antivirus	**20**	**30**

COURSES / MODULE TEMPLATE

NOS /Module: Managing Network Management & Server Configuration

NOS /Module Code: MSME/ADCHNM/04

Outcomes:

After completion of course Student should be able to:-

- Setup different network and share the resources.
- Understand about Cable management & Different types of connection.
- Understand about different types of topologies.
- Know about IP address & Subnetting.
- Knowledge about protocols.
- Configure network and their various services by using of latest version of server.
- Know about workgroup Module and Domain Module.
- Implementation of different services and knows its functions.
- Knowledge about to Installation the Server OS and configure different services
- Implement the different policy in Server System.
- Understand to manage ADDS,FTP,DNS,DHCP,WDS and wireless device and their configuration process

THEORY HOURS: 30 PRACTICAL HOURS: -150 , VIVA MARKS: 100 PRACTICAL MARKS: -100

Unit No.	Unit Name	Unit level outcomes	Contents (chapters/topics)	TH & PR hours	PR Marks
Unit I	**Network Essential & Cable Management**	After completion of unit Student should be able to • Understand how Computer Network is working. • Able to explain Network topology and transmission media. • Identify different types of cable (Twisted pair, Coaxial, Fibre-Optic-Cable) & Different Connectors. • Knowledge about Crimping and punching Technology • Understand the OSI Model and functions • Understand the TCP/IP & UDP Protocols • Understand the ranges of IP address & CIDR Values. • Know about private, Public & Reserve IP address	Introduction about Network, Types of Network (LAN,MAN,WAN) , benefit of network, Network topology, Transmission Media, Cabling Techniques, Cable Management(Crimping and punching), , Protocols & OSI Model, IP Addressing & Subnetting (CIDR,FLSM,VLSM), Peer to Peer Networking, Intermediate Device (HUB, Switch, Router, MLS, etc…), Network sharing and Permissions, Remote Desktop Connection.	**60**	**50**

		• Explain Subnetting (FLSM & VLSM) • Understand about the Function of end user device (PC, MOBILE) & Intermediate devices Configuration. • Understand connection process of (REPEATER, HUB, SWITCH, ROUTER, and MLS). • Understand brief knowledge of Peer to Peer networking.			
Unit II	**Network Establishment & Server Configuration**	After completion of unit Student should be able to • Understand Use of Client Server Architecture • Explain about Workgroup and Domain Module • Knowledge about to Installation the Server OS and configure different services • Able to manage Active Directory, client Registration, & Server security. • Knowledge about various server configuration and their services. • Explain to Implement the Group Policy Management • Understand DHCP Server Configuration. • Able to configure and manage FTP Server , WDS (Windows Deployment Service), ADC Server configuration • Identify different server configuration services / packages. • Understand of wireless device and their configuration process. • Able to manage and Configure N-Computing Devices.	Introduction about Network Servers Installation and Configuration- discuss about Client Server Architecture ,import ants of server and its use, install Server OS and Client OS, Configure Domain and Manage the network, Set Up User Accounts, Configure Network Settings, Install And Configure Applications, Set Up Shared Resources, Configure Security Measures, Set Server Backup. Create Domain user in AD-DS and manage login Policies, Manage the different Polices & restrictions, Configure DHCP Server, Configure the FTP Server and FSRM, Configure WDS Services, Configure the ADC, Configure N-Computing Technology & Wi-Fi settings.	**120**	**50**

COURSES / MODULE TEMPLATE

NOS /Module: Understand & Operate LINUX Operating System & its Management

NOS /Module Code: MSME/ADCHNM/05

Outcomes:

After completion of course Student should be able to:

- Understand use of Linux Operating System and installation
- Knowledge about basic commands of Linux.
- Knowledge about Various types of server configuration.
- Understand Linux file permission & Disk Management.
- Explain File system & Partitioning of Linux OS.
- Knowledge about to Configure DNS, DHCP and Apache web server and Web Hosting
- Understand Rescue mode operation and root password changes troubleshooting in Linux OS.

THEORY HOURS: NA PRACTICAL HOURS: - 80 THEORY MARKS: NA PRACTICAL MARKS: -100

Unit No.	Unit Name	Unit Level Outcomes	Contents (Chapters/Topics)	PR hours	PR Marks
Unit I	**LINUX Setup & Basic Commands**	After completion of unit Student should be able to • Understand use of Linux Operating System and installation • Explain Linux file systems • Understand and implement the basic commands of Linux	Introduction to OSS and Linux OS, UNIX/Linux OS Installation, Linux Operating System Used , Features Of the Linux Operating System, CLI Use and Operation, Linux Features & Hierarchical.	**20**	**30**
Unit II	**Linux Network Management**	After completion of unit Student should be able to • Understand Linux file permission & Disk Management. • Explain Mount drive & external Storage • Able to Install Packages and software up- gradation • Able to use Open Office Setup & Uses. • Rescue mode operation and root password changes.	Linux system configuring, and managing a multi-user UNIX/Linux computer system, File Systems, Disk Management & User Management, Configuration of Remote Access, Remote Desktop, Customizing, and Kernel Customizing, Linux file Permission, Install Packages and up gradation, Format & Partitioning table, Utility and add-ons installation, Open Office installation.	**20**	**35**

Unit III	**Linux Server Configuration & Security**	After completion of unit Student should be able to • Understand to manage network services and security. • Able to configure YUM Server Configuration • Knowledge about to Configure DNS, DHCP and Apache web server and Web Hosting. • Understand to Install and upgrade packages as per service of server. • Explain to Configure FTP, SCP and SAMBA server. • Use to Change boot process of Linux OS • Analysed parameters of Firewall & Se-Linux security.	Setting up for installation on a Linux server, Use, configure, manage, and troubleshoot. Demonstrate network management and computer security in the Linux environment. Configure basic TCP/IP networking services on computers in the workplace , Implement and administer a Linux Server, Install and administer server services, Manage Users and Groups, Setup and manage policies, Implement File Services, Secure a Linux Server, Confirming installation of FTP,SCP, YUM, DNS, DHCP, Web Server, Samba Server and Troubleshooting process of Linux.	**40**	**35**

COURSES / MODULE TEMPLATE

NOS /Module: Employability Skills

NOS /Module Code: MSME/ES/02

THEORY HOURS: 60 PRACTICAL HOURS: - THEORY MARKS: 100 PRACTICAL MARKS: -

Refer Standard Curriculum developed by NCVET. (60-hours-MC-Employability-Skills_v4-DGT (1).pdf)