

Syllabus for Service Technician-Computer (Hardware and Software)

Course Name	Service Technician-Computer (Hardware and Software)
Sector	Electronics & Hardware
Course Code	ELE/2023/TCHS/221
Level	3
Occupation	Computer Systems and Peripherals Technician, IT Support Specialist, Computer Hardware Technician, System Administrator
Job Description	A Service Technician-Computer (Hardware and Software) is responsible for ensuring the proper installation, configuration, and maintenance of computer systems, including desktops, laptops, and optionally servers. They diagnose and repair hardware and software issues, prioritize safety practices, and provide professional customer service. This role combines technical expertise, problem-solving skills, and effective communication to ensure computer systems run smoothly and meet user needs. With Optional module, the role will further involve setting up servers and storage system.
Course Duration	Total Duration Min 390 Max 450 Hrs (T- Min 90 Max 120, P- Min 240 Max 300, OJT-60 and ES-60)
Trainees' Entry Qualification	Grade 10 OR Grade 8 with two year of (NTC/ NAC) after 8 th OR Grade 8 pass and pursuing continuous schooling in regular school with vocational subject OR 8th grade pass with 2 yrs relevant experience OR Previous relevant Qualification of NSQF Level 2 with one yr experience OR Previous relevant Qualification of NSQF Level 2.5 with 6 months experience
Trainers Qualification	BE/BTECH IN ELECTRONICS/COMPUTER SCIENCE/IT/ELECTRICAL/ELECTRICAL AND ELECTRONICS, DIPLOMA IN ELECTRONICS/COMPUTERS/IT/ELECTRICAL/ELECTRICAL AND ELECTRONICS / ITI IN ELECTRONICS MECHANIC TRADE /ITI IN INSTRUMENT MECHANIC TRADE 2 YEARS BE/BTECH, 3 YEARS FOR DIPLOMA/ITI

Structure of Course:

Module No.	Module name	Outcome	Compulsory/ Optional/Elective	Theory (Hrs)	Practical (Hrs)	Total (Hrs) [Multiple of 30]
1	Safe Working Practices	Apply Safe Working Practices	Compulsory	10	20	30
2	Installation of desktop computer	Install the desktop computer and its peripherals.	Compulsory	10	20	30
3	Installation of Laptop	Install laptop and its peripherals.	Compulsory	10	20	30
4	Installation of Hardware and Software	Install and configure both hardware components and software applications on a computer system.	Compulsory	20	40	60
5	Disgnose and Repair	Identify, diagnose and repair a computer system and its associated peripherals.	Compulsory	30	60	90
6	Managing Customer service	Provide professional customer service and interact effectively with customers, manage expectations and handle inquiries	Compulsory	10	20	30
7	OJT	Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	Compulsory	--	60	60
8	Employability Skill	As per NCVET guided curriculum	Compulsory	60	--	60
9	Server, storage and network	Identify, diagnose and repair a Server System and its storage and network issues.	Optional	30	30	60
TOTAL:				Min 150 Max 180	Min 240 Max 270	Min 390 Max 450

Different Combination in which course may be offered

Course Name	Course Code	Course Duration	Full Marks
Service Technician-Computer (Hardware and Software)	ELE/2023/TCHS/221	390 Hours	1000
Service Technician-Computer (Hardware and Software) [with Optional: Server, storage and network]	ELE/2023/TCHS/221 [with Optional ELE/1023/OC7]	450 Hours	1100

SYLLABUS:**Module No. 1: Safe Working Practices**

Outcome: Work effectively at workplace following safe and ethical working practices and good customer relationship.

Theory Content:

- 1.1 State the importance of work ethics and workplace etiquette.
- 1.2 Study & discuss the common reasons for interpersonal conflict and ways of managing them effectively.
And the importance of following organizational guidelines for dress code, time schedules, language usage and other behavioural aspects.
- 1.3 Explain the common workplace guidelines and legal requirements on non-disclosure and confidentiality of business-sensitive information.
- 1.4 Describe the concept of waste management and methods of disposing hazardous waste.
- 1.5 Explain various warning and safety signs & describe different ways of preventing accidents at the workplace.
- 1.6 Explain the organizational safety procedures for maintaining electrical safety, handling tools and hazardous materials

Practical Content:

- 1.1 Develop a sample plan to achieve organisational goals and targets.
- 1.2 Role-play to demonstrate the use of professional language and behaviour that is respectful to all genders.
- 1.3 Apply organizational protocol on data confidentiality and sharing only with the authorized personnel.
- 1.4 Demonstrate the use of protective equipment suitable as per tasks and work conditions which may include safety goggles, gloves, antistatic wristbands, and ESD (Electrostatic Discharge) protection if working with sensitive components..
- 1.5 Prepare a report to inform the relevant authorities about any abnormal situation/behaviour of any equipment/system.
- 1.6 Demonstrate the steps to free a person from electrocution safely.
- 1.7 Demonstrate the application of defined emergency procedures such as raising alarm, moving injured people, etc.

Module No. 2: Installation of desktop computer

Outcome: Install the desktop computer and its peripherals.

Theory Content:

- Explain fundamental of computer system
- Explain various parts of desktop computer and their functions
- Explain various ports and connectors used to connect peripherals
- Identify tools and equipment for installation
- Assemble and install the computer system
- Explain Set up process of external devices and network equipment
- Explain hardware and software components needed for printer and scanner installation on desktop computer, such as:
 - i) Hardware Components:

- Printer and Scanner devices
 - USB or Network Connection
 - Power Source
- ii) Software Components:
- Device Drivers
 - Operating System Compatibility

Practical Content:

- Demonstrate various parts of desktop computer and their functions
- Use tools and equipment for installation
- Choose a clean, well ventilated and dust free area to set up the computer
- Demonstrate the procedure of Install the computer system
 - a) Plug the computer power cord into the surge protector/UPS and the other end into a power outlet
 - b) Connect the monitors power cable to a power source
 - c) Connect the keyboard and mouse to available USB ports on the computer
 - d) Turn on the surge protector/UPS. Press the power button on the computer to start the system
- Check and ensure functioning of system
- Demonstrate the setup procedure of external devices and network equipment.
- Demonstrate the installation procedure of the printer and scanner on desktop,

Installation Steps:

- i) Connect Hardware
- ii) Power On Devices
- iii) Install Drivers
- iv) Printer/Scanner Configuration
- v) Test Printing and Scanning

Module No. 3: Installation of Laptop

Outcome: Install laptop and its peripherals.

Theory Content:

- Explain various parts of laptop and their functions
- Identify tools and equipment for installation
- Explain the Install procedure for the laptop such as:
 - i) Charging
 - ii) Power On
 - iii) Operating System Installation
 - iv) Driver Installation
 - v) Software Installation
 - vi) Network Configuration
- Explain Set up process of external devices and network equipment
- Explain hardware and software components needed for printer and scanner installation on Laptop, such as:
 - i) Hardware Components:
 - Printer and Scanner devices
 - USB or Network Connection
 - Power Source
 - ii) Software Components:

- Device Drivers
- Operating System Compatibility

Practical Content:

- Demonstrate various parts of laptop and their functions
- Use tools and equipment for installation
- Demonstrate the Install procedure for the laptop such as:
 - i) Laptop Inspection
 - ii) Power Connection
 - iii) Initial Setup(language selection, time zone, and Wi-Fi network configuration)
 - iv) Operating System Installation
 - v) Driver Installation
 - vi) Windows Updates
 - vii) Peripheral Connection(mouse, keyboard, monitor, printer, or other accessories as required)
- Check and ensure functioning of system
- Demonstrate the setup procedure of external devices and network equipment.
- Demonstrate the installation procedure of the printer and scanner on laptop,

Installation Steps:

 - i) Connect Hardware
 - ii) Power On Devices
 - iii) Install Drivers
 - iv) Printer/Scanner Configuration
 - v) Test Printing and Scanning

Module No. 4: Installation of Hardware and Software

Outcome: Install and configure both hardware components and software applications on a computer system.

Theory Content:

- Explain the basic components of a computer system (CPU, motherboard, RAM, storage devices, etc.).
- Explain the difference between hardware and software.
- Describe the importance of proper installation and configuration.
- Explain essential tools and equipment for hardware installation and software configuration.
- Explain Install and configure hardware components such as:
 - i) Central Processing Unit (CPU)
 - ii) Motherboard
 - iii) Random Access Memory (RAM)
 - iv) Storage Devices (HDDs/SSDs)
 - v) Graphics Cards
 - vi) Power Supply Units (PSUs)
 - vii) Peripherals (keyboard, mouse, monitor, etc.)
- Explain Install and configure various software components such as:
 - i) Operating Systems (Windows, Linux, macOS)
 - ii) Device drivers
 - iii) Application software (Microsoft Office, Adobe Creative Suite, etc.)
 - iv) Antivirus software and its setting

Practical Content:

- Identify tools and equipment and their functions for installation
- Demonstrate proper methods of hardware installation such as:

- i) CPU Install
- ii) RAM Install
- iii) Storage Drive Install
- iv) GPU Install
- v) Power Supply Unit (PSU) Install
- vi) Peripheral Connect (monitor, keyboard, mouse, and other peripherals)
- Demonstrate proper methods of Software installation such as:
 - i) Operating System Install (Windows, Linux, macOS)
 - ii) Software Applications Install (Browser Software, Security Software, and Productivity Software)
 - iii) Antivirus software installation and its setting
- Establish the Network Configuration (network connections, network settings, IP addresses, and DNS)
- Demonstrate the proper procedures of backup strategies and data recovery

Module No. 5: Diagnose and Repair

Outcome: Identify, diagnose and repair a computer system and its associated peripherals.

Theory Content:

- Explain the required tools and equipment and their functions
- Safety measures for handling computer equipment and peripherals, including precautions against ESD and other hazards.
- Explain the symptoms and identify the fault of hardware of a computer system(desktop, laptop), Such as:
 - i) The Computer is Frozen
 - ii) The Keyboard is Not Working
 - iii) Key Got Stuck
 - iv) Incompatibility Issue with System Configuration
 - v) The Mouse is Not Working Correctly
 - vi) The Computer has No Sound
 - vii) Problem in Network Configuration
 - viii) No Power
 - ix) Blank Screen (Nothing Appears on the Screen)
 - x) Computer Doesn't Show Power
- Explain the symptoms and identify the fault of software of a computer system(desktop, laptop), Such as:
 - i) Devices Not Listed in BIOS
 - ii) No Operating System(OS) Found or Similar Message
 - iii) Non-Working Devices/Device Not Recognized
 - iv) Problems After Installing New Software or Device Driver
 - v) Spontaneous Reboots
 - vi) System Time Keeps Changing
 - vii) Nothing Happens when Power Button is pressed
 - viii) System Turns On, but Begins to Boot Up
 - ix) System Turns On, Beeps Irregularly, Does Not Boot
 - x) System Turns On, Gives Quick Beeps, Does Not Boot
 - xi) System Freezes Intermittently while Installing the OS
 - xii) Problems in Installing OS, Blue Screens

- Explain the common fault of peripherals(printer, scanner), Such as:
 - i) No Light in Power Indicator of Printer
 - ii) No Paper or Paper Jam
 - iii) No Flashing Light but Cables Properly Connected

Practical Content:

- Demonstrate the proper use of tools and equipment
- Identify the fault of hardware of a computer system(desktop, laptop) and its rectification, Such as:
 - i) The computer is Frozen
 - ii) The Keyboard is Not Working
 - iii) Key Got Stuck
 - iv) Incompatibility Issue with System Configuration
 - v) The Mouse is Not Working Correctly
 - vi) The computer has No Sound
 - vii) Problem in Network Configuration
 - viii) No Power
 - ix) Blank Screen (Nothing Appears on the Screen)
 - x) Computer Doesn't Show Power
- Identify the fault of software of a computer system(desktop, laptop) and its rectification, Such as:
 - i) Devices Not Listed in BIOS
 - ii) No Operating System (OS) Found or Similar Message
 - iii) Non-Working Devices/Device Not Recognized
 - iv) Problems After Installing New Software or Device Driver
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 - x) System Turns On, Gives Quick Beeps, Does Not Boot
 - xi) System Freezes Intermittently while Installing the OS
 - xii) Problems in Installing OS, Blue Screens
- Identify the common fault of peripherals (printer, scanner) and its rectification, Such as:
 - i) No Light in Power Indicator of Printer
 - ii) No Paper or Paper Jam
 - iii) No Flashing Light but Cables Properly Connected
- Techniques for diagnosing and resolving computer issues remotely, including using remote desktop software and network diagnostics

Module No. 6: Customer Service and Communication

Outcome: Provide professional customer service and interact effectively with customers, manage expectations and handle inquiries

Theory Content:

1. Discern Customer Needs and Offer Advice or Recommendations:**a. Ask the Customers' Requirements:**

- Start by actively listening to the customer.
- Ask open-ended questions to gather information about their needs and preferences.
- Ensure that the language used is clear and easy to understand.

b. Promote Products Meeting Customer Needs:

- Recommend products or services that align with the customer's requirements.
- Highlight features and benefits that address their specific needs.

c. Use Lucid and Simple Language:

- Avoid jargon or technical terms.
- Communicate in a way that the customer can easily grasp.

2. Explain the Company's Policy to Customers:**a. Familiarity with Company Policy:**

- Before interacting with customers, ensure field technicians are well-versed in the company's policies.
- Policies may include refund, return, warranty, or any other relevant terms.
- Clearly explain the pricing structure for repairs and any associated fees.

b. Quoting Relevant Policies:

- When addressing customer concerns, quote the relevant parts of company policies.
- Use simple language to make policies clear to customers.

3. Follow Basic Etiquette Norms:**a. Greetings:**

- Greet customers with "Good Morning," "Good Evening," or appropriate greetings.
- Show respect and politeness in interactions.

b. Polite Language:

- Use polite words such as "Thank You" and "Have a Nice Day."
- Maintain a respectful tone throughout the interaction.

c. Proper Non-Verbal Behaviors:

- Maintain a pleasant facial expression, including smiling when appropriate.
- Ensure body language conveys warmth and professionalism.

4. Carry Relevant Documents:**a. User Manual:**

- Always have the product's user manual on hand for reference.

b. Company's Policy:

- Carry copies of company policies, especially when discussing warranty, returns, or refunds.

c. Personal ID Card:

- Present a personal ID card for customer verification and trust-building.

Practical Content:

1. How to Inquire About Customer Needs and Problems:

a. Create Customer's Personal Data:

- Role-play scenarios where technicians create a customer profile with information like age, gender, location, income, and hobbies.

b. Seek Feedback:

- Practice asking customers for feedback on their experiences.
- Encourage open and honest communication.

c. Gauge Emotional Impact:

- Role-play how to ask customers about their emotional response to the product or service.
- Learn to address emotional concerns effectively.

d. Implement Changes:

- Role-play scenarios where changes are implemented based on customer feedback.
- Revisit customers to ensure improvements meet their expectations.

2. Role-play Communication with Customers:

a. Skit Presentation:

- Organize skit presentations involving interactions between customers and field technicians.
- Address topics like service cost estimates, warranties, and seeking customer approval.

b. Telephonic Conversation:

- Practice telephonic communication with customers, covering service cost estimates, warranty discussions, and gaining customer approval.

Tools and equipment needed:

whiteboards/blackboards

projectors,

laptop

Module No. 7: OJT

Outcome: Work in real job situation with special emphasis on basic safety and hazards in this domain

Practical Content:

Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for **60 Hours**.)

Module No. 8: Employability Skills (60 Hrs)

Key Learning Outcomes**Introduction to Employability Skills**

Duration: 1.5

Hours

After completing this programme, participants will be able to:

1. Discuss the Employability Skills required for jobs in various industries
2. List different learning and employability related GOI and private portals and their usage

Constitutional values - Citizenship

Duration: 1.5

Hours

3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
4. Show how to practice different environmentally sustainable practices.

Becoming a Professional in the 21st Century

Duration: 2.5

Hours

5. Discuss importance of relevant 21st century skills.
6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
7. Describe the benefits of continuous learning.

Basic English Skills

Duration: 10

Hours

8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
9. Read and interpret text written in basic English
10. Write a short note/paragraph / letter/e -mail using basic English

Career Development & Goal Setting

Duration: 2 Hours

11. Create a career development plan with well-defined short- and long-term goals

Communication Skills

Duration: 5 Hours

12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

Diversity & Inclusion

Duration: 2.5

Hours

15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
16. Discuss the significance of escalating sexual harassment issues as per POSH act.

Financial and Legal Literacy

Duration: 5 Hours

17. Outline the importance of selecting the right financial institution, product, and service

18. Demonstrate how to carry out offline and online financial transactions, safely and securely
19. List the common components of salary and compute income, expenditure, taxes, investments etc.
20. Discuss the legal rights, laws, and aids

Essential Digital Skills
Hours

Duration: 10

21. Describe the role of digital technology in today's life
22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
24. Create sample word documents, excel sheets and presentations using basic features
25. utilize virtual collaboration tools to work effectively

Entrepreneurship

Duration: 7 Hours

26. Explain the types of entrepreneurship and enterprises
27. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
29. Create a sample business plan, for the selected business opportunity

Customer Service

Duration: 5 Hours

30. Describe the significance of analyzing different types and needs of customers
31. Explain the significance of identifying customer needs and responding to them in a professional manner.
32. Discuss the significance of maintaining hygiene and dressing appropriately

Getting Ready for apprenticeship & Jobs

Duration: 8 Hours

33. Create a professional Curriculum Vitae (CV)
34. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
35. Discuss the significance of maintaining hygiene and confidence during an interview
36. Perform a mock interview
37. List the steps for searching and registering for apprenticeship opportunities

Module No. 9 (Optional): Server, storage and network

Outcome: Install, Configure and set up the server, network and storage system.

Theory Content:

1. Concept of server and physical requirements necessary for installing server.
2. Introduction to Windows Server.
3. Installation steps and configuration of server.
4. Concept of Active Directory and DNS.
5. Setting up of DHCP, Routing and remote access.
6. Introduction to Linux Server.
7. Basic Configuration, Editing /etc/host
8. Concept of DHCP, DNS, Web Server (Apache), SAMBA
9. Linux Package & package Installer.
10. Concept of virtual Server.
11. Concept and implementation of network storage resources

12. Security solutions for servers, Accounts, and authentication etc in a networked environment.

Practical Content:

1. Install & configure Windows Server
2. Configure services like Active Directory, DNS and DHCP.
3. Configure IIS Web server
4. Configure of broadband modem and sharing Internet connection
5. Troubleshooting servers, workstations
6. Install & configure Linux Server
7. Configure following on Linux Server: (a) /etc/hosts file,
(b) DHCP,
(c) DNS,
(d) WEB SERVER,
(e) NFS
(f) SAMBA.
9. Using system control command for Configuration and monitoring daemon and services.
10. Use of grep command for search

Learning Outcome – Assessment Criteria

Module No.	Outcome	Assessment Criteria
1	Work effectively at workplace following safe and ethical working practices and good customer relationship.	After completion of this module students will be able to: 1.1 Read warnings, instructions and other text material on product labels, components, etc. and relevant sign ages, warnings, labels or descriptions on equipment, etc. while carrying out work activities 1.2 Listen, speak, and write in an inclusive, respectful manner in line with organizational protocol 1.3 Deliver product to next work process on time 1.4 Co-operate with authorities and supervisors as per organizational protocol 1.5 Write health and safety compliance report 1.6 Take precautionary activities to prevent the fire accident 1.7 Interpret general health and safety guidelines labels, charts, sign ages 1.8 Communicate general health and safety guidelines to colleagues/co-workers 1.9 Describe the concept of waste management and methods of disposing hazardous waste as per organisational policy
2	Install the desktop computer and its peripherals.	After completion of this module students will be able to: 2.1 Ensure that the desktop computer and all peripherals are compatible with each other in terms of connectors. Driver and power requirements. 2.2 Explain fundamental of computer system

Module No.	Outcome	Assessment Criteria
		2.3 Check all the cables and connections are properly plugged in and secured. 2.4 Explain various parts of desktop computer and their functions 2.5 Use tools and equipment for installation 2.6 Demonstrate the procedure of Install the computer system 2.7 Demonstrate the setup procedure of external devices and network equipment. 2.8 Explain hardware and software components needed for printer and scanner installation on desktop computer 2.9 Demonstrate the installation procedure of the printer and scanner on desktop
3	Install laptop and its peripherals.	After completion of this module students will be able to: 1.1 Verify that the laptop and peripherals are compatible with each other in terms of connectors, drivers and power requirements. 1.2 Confirm that power sources are connected and safely positioned. 1.3 Verify that the laptop can connect to the network, both wired and wireless, if required. 3.4 Explain various parts of laptop and their functions 3.5 Use tools and equipment for installation 3.6 Demonstrate the Install procedure for the laptop 3.7 Demonstrate the setup procedure of external devices and network equipment. 3.8 Check and ensure functioning of system 3.9 Explain hardware and software components needed for printer and scanner installation on Laptop 3.10 Demonstrate the installation procedure of the printer and scanner on laptop
4	Install and configure both hardware components and software applications on a computer system.	After completion of this module students will be able to: 4.1 Explain the basic components of a computer system (CPU, motherboard, RAM, storage devices, etc.). 4.2 Explain the difference between hardware and software. 4.3 Describe the importance of proper installation and configuration 4.4 Identify tools and equipment and their functions for installation 4.5 Demonstrate proper methods of hardware installation 4.6 Demonstrate proper methods of Software installation 4.7 Establish the Network Configuration(network connections, network settings, IP addresses, and DNS) 4.8 Demonstrate the proper procedures of backup strategies and data recovery

Module No.	Outcome	Assessment Criteria
5	Identify, diagnose and repair a computer system and its associated peripherals.	After completion of this module students will be able to: 5.1 Identify, select the required tools and equipment and their functions 5.2 Observe the symptoms and identify the fault of software of a computer system(desktop, laptop) and its rectification 5.3 Visualize the symptoms and identify the fault of software of a computer system(desktop, laptop) and its rectification 5.4 Explain the symptoms and identify the fault of peripherals and its rectification 5.5 Techniques for diagnosing and resolving computer issues remotely
6	Provide professional customer service and interact effectively with customers, manage expectations and handle inquiries	After completion of this module students will be able to: 6.1 Demonstrate effective listening skills when interacting with customers to gather information. 6.2 Utilize open-ended questions to probe and clarify customer needs and preferences. 6.3 Recommend appropriate products or services that align with the customer's stated requirements. 6.4 Explain company policies clearly and apply them appropriately when addressing customer concerns. 6.5 Display polite and professional etiquette by greeting customers courteously and using polite language including smiling when interacting with customers. 6.6 Carry and present relevant documents, such as user manuals and ID cards, when required. 6.7 Demonstrate the ability to create a customer profile with details like age, gender, location, income, and hobbies. 6.8 Seek and encourage constructive feedback from customers to improve service quality. 6.9 Evaluate and respond to the emotional impact of the product or service on customers effectively. 6.10 Participate in skit presentations to practice communication skills with customers on various topics. 6.11 Engage in telephonic conversations with customers, addressing topics such as service cost estimates and warranty discussions.
7	Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT)	Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for 60 Hours.)

Module No.	Outcome	Assessment Criteria
8	Employability Skill	As per guided curriculum
9	Identify, diagnose and repair a Server System and its storage and network issues.	After completion of this module students will be able to: 7.1 Explain the server and physical requirements necessary for installing the server. 7.2 Demonstrate the Installation steps and configuration of the Windows server. 7.3 Explain the configuration services like Active Directory, DNS and DHCP. 7.4 Explain the setup of DHCP, Routing and remote access. 7.5 Explain the Configuration of the IIS Web server, broadband modem and sharing Internet connection. 7.6 Demonstrate the Installation steps and configuration of the Linux server. 7.7 Explain the Concept of DHCP, DNS, Web Server (Apache), and SAMBA. 7.8 Implement network storage resources. 7.9 Use system control command for Configuration and monitoring daemon and services. 7.10 Troubleshoot the servers and workstations.

List of Tools, Equipment & materials needed for 30 Trainees (Practical)

S No.	Name of the Tools and Equipment	Specification	Quantity
A. Trainees Tools/ Equipment			
1.	Desktop Computer	CPU: 32/64 Bit i3/i5/i7 or latest processor, Speed: 3 GHz or Higher. RAM:-4 GB DDR-III or Higher, Wi-Fi Enabled. Network Card: Integrated Gigabit Ethernet, with USB Mouse, USB Keyboard and Monitor (Min. 17 Inch. Licensed Operating System and Antivirus compatible with trade related software.	15nos. (For Trainee) + 1 no. for Instructor
2.	Laptop	4 th Gen Ci5 or higher Processor, 4GB RAM, 1TB Hard Disk, Win8/latest reloaded Licensed OS, 2GB Graphic Card, DVD Writer, Standard ports and connectors.	1 no.
3.	Wi-Fi Router	With wireless connectivity	5 no.
4.	Switch	16 port	5 no.
5.	Structured Cabling in Lab	To enable working with wired networks for practical	As required

6.	Internet Connectivity	Broadband connection with min. 30mbps speed	As required
7.	LCD Projector	3000 lumens or higher	1 no.
8.	Projector Screen	Matte(antiglare) screen roll type	1 no.
9.	Offline UPS	625 VA or Higher	15 nos.
10.	External Hard Disk	1 TB	1 no.
11.	Network Rack	4U for 24 port	1 no.
12.	Screw Driver Set	Standard	1 set
13.	Mini Dongle for Bluetooth Devices Connection	USB	2 nos.
14.	Patch Panel	24 Port	1 no.
15.	LAN Tester	UTP cat5 cable tester (RJ 45)	1 no.
16.	Post cards		1 no.
17.	Cables (RJ45)		10 nos.
18.	Network switch		1 no.
19.	Server		1 no.
20.	Crimping tool		2 nos.

B. Software (Latest Version)

21.	MS Office	2010 (professional) or the latest version available at the time of procurement	15 Licenses
22.	Antivirus for – clients/ workstations in profile	Validity of an year or more which should be renewed upon expiry	15Licenses

C. List of Other Items/ Furniture

23.	Vacuum Cleaner	Hand Held, Blower &Sucker	1 no.
24.	Pigeon Hole Cabinet	20 compartments	1 no.
25.	Chair and table for the instructor	With armrest mounted on castor wheels, adjustable height/Standard	01 each(for class room & laboratory)
26.	Dual Desk or Chair and Tables for Trainees	Standard	12/ 24nos.
27.	Computer Table	Laminated top 150X650X750 mm withsliding tray for keyboard and one shelf of storage	13nos.
28.	Operators Chair	Without arms mounted on castor wheels, adjustable height	24nos.
29.	Printer Table	650X500X750 mm can be varied as per local specifications	03nos.
30.	Air Conditioner		As required
31.	Storage Cabinet	60X700X450mm	01no.
32.	White Board	Minimum 4X6 feet	01 no.
33.	Steel Almirah	2.5 m x 1.20 m x 0.5 m	01 no.

D. Raw Materials

34.	White Board Marker	Assorted colour	As required
35.	Duster Cloth	2’/2’	As required
36.	Cleaning Liquid	500 ml	As required

37.	Photo Copy Paper	A4	As required
38.	Matt Coated Paper	A4, at least 130 GSM	As required
39.	Glossy Paper	A4, at least 130 GSM	As required
40.	Cartridges for Printer	Colour/monochrome as per model of the printer	As required
41.	Stapler	Small	2 pcs.
42.	Stapler	Big	1 pc.
43.	Scissors	Standard Size	5 pcs.
44.	Cello Tape	½” and 1”	As required
45.	Glue Stick	Standard size	6 nos.
46.	Pen drive	16 GB or higher	2 nos.
47.	CDs	52x or higher	50 nos.
48.	DVDs	4.7GB or higher	50 nos.
49.	Wall Clock	Analog	1 no.
50.	Optical Mouse	USB/PS2	As required
51.	Keyboard	USB/PS2	As required
52.	Battery	CMOS Batteries	As required
53.	Chord	3 Pin Power Chord	As required
54.	Battery for LAN tester	9 V	As required
55.	Battery	AA	As required
56.	Battery	AAA	As required

Marks Distribution

Outcome	Outcome Code	Type	Total Th marks	Total Pr Marks
Apply Safe Working Practices	ELE/1023/OC1	Compulsory	10	90
Install the desktop computer and its peripherals.	ELE/1023/OC2	Compulsory	10	90
Install laptop and its peripherals.	ELE/1023/OC3	Compulsory	20	90
Install and configure both hardware components and software applications on a computer system.	ELE/1023/OC4	Compulsory	40	130
Identify, diagnose and repair a computer system and its associated peripherals.	ELE/1023/OC5	Compulsory	50	160
Provide professional customer service and interact effectively with customers, manage expectations and handle inquiries	ELE/1023/OC6	Compulsory	20	90
Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	ELE/1023/OC8	Compulsory	0	150
Employability Skill-60 Hrs	DGT/VSQ/N0102	Compulsory	50	0
Identify, diagnose and repair a Server System and its storage and network issues.	ELE/1023/OC7	Optional	20	80
Full Marks: Minimum 1000 (Th 200, Prac. 800) without Optional Maximum marks 1100 ((Th 220, Prac. 880) with Optional				

