**ADVANCE DIPLOMA IN COMPUTER HARDWARE NETWORK MANAGEMENT WITH CCNA.**

* Course ID **: MSME/**
* Candidate Eligibility**: 10+2 pass out, any discipline.**
* No. of NOS (if QP) : Under process
* NSQF Level : **3**
* Cost Category : **1**
* Course Duration **:**
* Theory duration**: 150 hrs.**
* Practical**: 340 hrs.**

**Trainer Qualification and Work Experience:**

**Trainer Qualification: Any graduate, Diploma/Degree with Electronics, C.S, & IT**

**Work Experience : 2 Yrs.**

**CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE**

**Name and address of submitting body:**

**MSME TOOL ROOM – KOLKATA**

**(Central Tool Room & Training Centre)**

**Ministry of MSME , Govt. of India**

**Bonhooghly Industrial Area**

**Kolkata – 700108 , West Bengal**

**Ph: (033)25788769,25771068**

**Name and contact details of individual dealing with the submission**

**Name: Shri Kanakendu Das**

**Position in the organisation: Senior Manager-Trg**.

**Tel number(s): 9231897100**

**E-mail address:** **cttc@cal.vsnl.net.in** **/ cttc-msme@gov.in**

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| **Qualification Title :** | **ADVANCE DIPLOMA IN COMPUTER HARDWARE NETWORK MANAGEMENT WITH CCNA.** |
| **Qualification Code** | **MSME / ADCHNM WITH CCNA** |
| **Nature and purpose of the :****Qualification**  | **Nature:** **Certificate course of ADCHNM WITH CCNA.****Purpose:** ADCHNM WITH CCNA is a flagship course by which, the students, any employees can design, built & maintains the computer related issues & manage complex computer network.At the end of the training programme trainee shall be able to do specify, identify, assembled the computers & trouble shoot, also able to create innovate ideas for setup LAN through different servers & can configure different router & switches with security & solve various network related issue. |
| **Body/bodies which will** **award the qualification**  | **Ministry of Micro, Small and Medium Enterprises**, **New Delhi (Certificate Awarded by MSME TOOL ROOM – KOLKATA )** |
| **Body which will accredit providers to offer courses** **leading to the qualification**  | **Ministry of Micro, Small and Medium Enterprises**, **New Delhi ( MSME-TCs in respective Extension Centre)** |
| **Body/bodies which will****carry out assessment of****learners**  | Examination Cell of MSME TOOL ROOM - KOLKATA |
| **Occupation(s) to which the qualification gives access** | Service Engineer, Network Engineer Business, self employed.. |
| **Licensing requirements** | NA |
| **Level of the qualification in****the NSQF**  |  **3** |
| **Anticipated volume of** **training/learning required to complete the qualification** | 490 hrs |
| **Entry requirements and/or****recommendations** | Degree / Diploma (Any discipline), any Graduate, ITI, BCA, MCA and 10+2 pass out equivalent. **Minimum 18 yrs old** |
| **Progression from the** **qualification**  | Qualifying trainee should obtain a NSQF certificate in ADCHNM WITH CCNA. This qualification shall enable the trainee to find employment on a Super-skilled work / Design High profiled secure network with managing the industrial requirement in level 3 of NSQF. |
| **Planned arrangements for the Recognition of Prior** **learning (RPL)**  | Learner who have fulfils the above criteria’s, the qualification certificate can be achieved by the learner through appearing / passing the examination of the qualification modules. RPL Assessment will done by the assessment body. |
| **International comparability** **where known**  | MSME TOOL ROOM, Kolkata & the US network Giant CISCO approved qualification CCNA. |
| **Date of planned review of the qualification.**  | After 3 years of recognition.  |

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| **Formal structure of the qualification** |  |
| **ADCHNM WITH CCNA** | **Mandatory/****Optional** | **Estimated size****(learning hours)** | **Level** |
| Computer fundamental organization and Basic electronics | Mandatory | 80 Hrs | 3 |
| Operate computer parts and peripherals | Mandatory | 70 Hrs | 4 |
| Operating system | Mandatory | 30 Hrs | 4 |
| Network Essential | Mandatory | 60 Hrs | 3 |
| Windows Networking and Server & Client networking | Mandatory | 70 Hrs | 4 |
| CCNA R &S (1 , 2) | Mandatory | 90 Hrs | 4 |
| CCNA R &S (3 , 4) | Mandatory | 90 Hrs |  |
| **Total** |  | **490 Hrs** |  |

**ASSESSMENT**

**Body/Bodies which will carry out assessment:**

Assessment for the ADCHNM WITH CCNA and Special Effect is conducted in Examination Cell of MSME TOOL ROOM – KOLKATA.

**Will the assessment body be responsible for RPL assessment?**

**YES.** Learners who have met the requirements of any Unit Standard that forms part of this qualification may apply for recognition of prior learning to the relevant Education body. The applicant must be assessed against the specific outcomes and with the assessment criteria for the relevant Unit Standards.

**How will RPL assessment be managed and who will carry it out?**

The Learners who have met the requirements of any Unit Standard that forms part of this qualification may apply for recognition of prior learning (RPL) to the relevant Education body/Institute with proper evidences. The applicant must be assessed against the specific outcomes and with the assessment criteria for the relevant Unit Standards by the Assessment Body of Respective Institute.

**Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.**

The assessment for the Session -based qualification is carried out by conducting formative assessments, and end-of-session examinations for all trainees aspiring for this qualification, as per the guidelines given. The internal assessments for theory subjects and practical are conducted by the concerned instructors for evaluating the knowledge and skill acquired by trainees and the behavioural transformation of the trainees as per the learning outcomes specified the qualification. This assessment is primarily carried out by collecting evidence of competence gained by the trainees by observing them at work, asking questions and initiating formative discussions to assess understanding and by evaluating records and reports, and marks are awarded to them. Theory examinations are conducted in Machine Shop Theory, Engineering Metrology, Workshop Calculation & Science, Engineering Drawing and Employability Skills. The question papers for the theory Examinations contain objective type questions. Trade practical examinations are conducted. Criteria for assessment based on each learning outcomes, will be assigned marks proportional to its importance. The assessment for the theory &practical part is based on knowledge bank of questions created by trainers and approved by Examination cell/Assessment body. The distribution of marks for the qualification are as under:

**ELIGIBILITY TO APPEAR IN THE EXAM:** Minimum 70% class attendance is compulsory for the students to appear for the assessments

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| **4. MARKING SCHEME:**

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| **Sr. No.** | **Method of Assessments** | **Weightage (Max. marks)** | **Evaluator** |
| **1** | Written test | 30 | **Trainer + Moderator, Examiner nominated by Examination cell.** |
| **2** | Practical test | 30 |
| **3** | Oral test/viva voce | 10 |
| **4** | Portfolio | 10 |
| **5** | Project | 10 |
| **6** | Direct Observation | 10 |
| **Total** | **100** |  |

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**Minimum pass mark (COMPETENT):** Passing criteria is based on marks obtain in attendance record, term works , assignments, practical’s performance, viva or oral exam, module test, practical exam and final exam.

**RESULTS AND CERTIFICATION:** Successful trainees will be awarded the Final Mark Sheet and Certificates by **MSME TOOL ROOM, KOLKATA.**

**ASSESSMENT EVIDENCE:** Assessment evidence comprises the following components document in the form of records:

* Job carried out in labs/workshop ; Record book/ work diary
* Examination - Answer sheet of assessment
* Viva –voce ; Class test
* Progress chart ; Attendance and punctuality
* Assignment of practical exercise job ; Practical Exam for each module

**Title of Component: ADCHNM WITH CCNA**

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| **Sr. No.** | **Outcomes to be assessed** | **Assessment criteria for the outcome** |
| 1To10 | **Computer Organization & Fundamentals** 1. Identification of different types of computer 2. Setup of computers for organizational area3. Identification of different parts of computer**BASIC ELECTRONICS**1. Using the Analog & Digital Multimeters2.Different Resistor value identification & Checking3. Different capacitor value identification & checking4. Checking of Transformers5. Identification of Diodes, Transformers, Ic’s6. Implementation of all above components.7. Making of Series & Parallel Ckt. 8. Using of Vera Board & Bread board9. Different circuit**Operate Computer parts & peripherals**1. Getting confidence to use Microsoft word, Excel, PowerPoint & internet for official purpose
2. Design the unregulated power supply testing,
3. Gaining fully knowledge on SMPS circuit diagram tracing, fault finding, trouble shooting repairing.
4. Trace out of different kinds of Motherboard, cards, slots, ports connectors & its use.
5. Installation of memory & troubleshooting
6. Using BIOS & detection
7. Hard drive problem shutout
8. Parts identification & Trouble shoot for different types of display devices.
9. Assembling & disassembling of various types of Printers & scanners with trouble shoot.
10. Making bootable & non bootable disk.
11. Repairing knowledge for CD & DVD drives.
12. Keyboard internal structure with arrangement
13. Doing the assemble & disassemble separately
14. Assemble & disassemble of laptops with parts identification.

**Operating System**1. Partitioning & formatting of HDD.
2. Loading of Windows Operating systems.
3. O.S Repairing
4. Dual Booting, making of flash drive bootable.
5. Drivers & Application software installation.
6. Creating users, using the administrative management, control panel etc..
7. Installation of external Hardware devices.
8. Using the system tools for trouble shooting.
9. Data Recovery. Data Backup,

 10. Practice with Linux**Network Essential**1. Physical design the topology and identification 2. Installation of network devices and Nic cards.3. Installation of network media.4. Colour coding method and RJ-45 connection.6. I/O box configuration.7. IP subnetting.8. IPv4 address configurationIn different windows OS.9. Mac addresses verification.10. IPv4 connectivity & troubleshooting.11. IPV6 configuration.**Windows Networking** 1. File and folder sharing on WIN. XP, 7, 8 etc.2. File and folder accessing WIN. XP, 7, 8 etc3. Permission on share folder and drive for different OS WIN. XP, 7, 8 etc.4. Remote desktop between two pc.5. Remote assistance.6. Window messenger.8. Offline files sharing.9. Net meeting connection.10. Windows Telnet. **Server and client networking** 1. Window Server 2003 and 2008 installation.2. DNS configuration3. Primary and secondary DNS configuration 4.Active directory domain controller configuration5. Client connection to the server. 6. Create user and group on server.7. User and group permission, data accessing permission.8. Group policy configuration.9.DHCP server configuration and client connection10. DHCP reservation and exclusion.11. FTP server.12. WDS server configuration and remote installation of OS in client system12. Wireless LAN configuration.**CCNA R & S (M-1)**1. IP subnetting.2. IPv4 address configuration.3. Mac addresses verification. 4. IPv4 connectivity & troubleshooting.5. IPV6 configuration.6. Colour coding method and RJ-45 connection**CCNA R & S (M-2)** 1. Basic configuration of switch on packet tracer.2. All types of security and password configuration.3. VLAN implement and connection.4. Native VLAN and port trunking.5. Physical switch implementation.6. Static and dynamic routing.7. RIP, EIGRP, OSPF etc.8. Physical router configuration and using of routing protocols.**CCNA R & S (M-3)** 1. VTP Configuration2. STP & PVST3. ETHER channel and link aggregation4. HSRP 5. Multi area OSPF.6. Advance Eigrp.7. Wireless configuration**CCNA R & S (M-4)**1. IOS Backup and Restore in switch and router.2. PAP And CHAP configuration3. Frame Relay configuration4. NAT and PAT configuration.5. PPOE6. IPSEC. | **Computer Organization & Fundamentals** 1. Introduction to the world of computers2. Awareness of electrical safety 3. Description To various types of computers4. Parts Identification & description5. Computing Process & Activities**BASIC ELECTRONICS**1. Introduction to Electricity
2. Regarding multimeter
3. Resistors
4. Capacitors
5. Semiconductor devices
6. Transformer
7. Inductors
8. Diodes
9. Transistors, FET, Mosfet
10. IC’s
11. Introduction to Digital electronics
12. Number Systems, Logic Gates

**Operate Computer parts & peripherals**1. Familiar to Microsoft Office 2007 package.
2. Switch mode power supply
3. Mother Board & Microprocessor
4. Internal Memory
5. Hard Disk Drive & SSD
6. Compact Disk Drives, DVD, BRD
7. Display Devices
8. Printer & Scanner
9. Keyboard & Mouse
10. UPS
11. Assembling & De assemble

Laptop Overview**Operating System**1. Introduction to operating system & features
2. Knowing about file system & its use
3. Loading of Operating systems
4. Introduce with all managerial configuration for all operating systems.

 5. Linux **Network Essential**Introduction to Network2.Overview on Network topology3.Classification of topology4.Overview on network protocol 5.Types of devices 6. Repeater, hub, switches & Router etc 7. Introduction of transmission media8. Classification of transmission media.9. Details about OSI reference model.10. TCP/IP model11. Computer Addressing details.12. IPv4 addressing 13. IPv6 addressing**Windows Networking** 1. Basic idea about all the network physical accessing and configuration.**Server and client networking** 1. Server and client basic idea.2. DNS 3. DNS namespace.4. Active directory.5. DHCP.**CCNA R & S (M-1)**1.Introduction to the Net space2. Network Layers & protocols3. IP Addressing4. FLSM & VLSM **CCNA R & S (M-2)** 1. Basic Switching Concept.
2. Switch Configuration & security
3. Basic Routing Concept

Implementing of Routing Protocols**CCNA R & S (M-3)** 1. Advance switching Concept2. Advance Routing Protocols3. Wireless networking**CCNA R & S (M-4)**1. IOS Information.2.WAN Communication  |
| **Means of assessment 1 and 2****Skill performance is assess by conducting**1. Assignment for each module
2. Written test for each module
3. Final exam after completion of all module
4. Practical exam for each module
5. Final practical exam after completion of all module
6. Viva / Oral Exam
7. Project report and presentation
 |
| **Pass/Fail**Passing criteria is based on marks obtain in attendance record, term works , assignments, practical’s performance, viva or oral exam, module test, practical exam and final exam 1. Minimum Marks to pass practical exam – 70%
2. Minimum Marks to pass final exam – 70%
3. Minimum Marks to pass viva / oral exam –70%
4. Minimum Marks to pass Project report and presentation exam – 90%
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| **EVIDENCE OF PROGRESSION**

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| **What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?**Qualifying trainee will obtain an MSME TOOL ROOM KOLKATA Certificate in ‘ADCHNM WITH CCNA’. After 1 year of experience give the opportunities to the trainees to work as a service engineer, technical help desk supporter, System Administrator, Network Administrator in all types of leading company in all over the world. |

**Diagram shows the mobility for horizontal and vertical progression from qualification to qualification within same sector / sub sector****ADCHNM WITH CCNA**cisco.jpgnw trouble.jpg

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| **Level 1** |  **Service Engineer, Field Technician** |
| **Level 2** | **Supervisor**  |
| **Level 3** |  **Server Administrator** |
| **Level 4** | **Network Administrator** |

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**COURSE CURRICULUM**

**Course Title: ADCHNM WITH CCNA**

**Duration : 490 Hrs**

**DETAILED SYLLABUS:**

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| **Serial no.** | **Subject** | **Syllabus For****Trade theory** | **Syllabus For****Trade practical** |
| **1.** | **Computer Organization & Fundamentals** | 1. Introduction to the world of computers2. Awareness of electrical safety 3. Description To various types of computers4. Parts Identification & description5. Computing Process & Activities | 1. Identification of different types of computer 2. Setup of computers for organizational area3. Identification of different parts of computer |
| **2.** | **BASIC ELECTRONICS** | 1. Introduction to Electricity
2. Regarding multimeter
3. Resistors
4. Capacitors
5. Semiconductor devices
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11. Introduction to Digital electronics
12. Number Systems, Logic Gates
 | 1. Using the Analog & Digital Multimeters2.Different Resistor value identification & Checking3. Different capacitor value identification & checking4. Checking of Transformers5. Identification of Diodes, Transformers, Ic’s6. Implementation of all above components.7. Making of Series & Parallel Ckt. 8. Using of Vera Board & Bread board9. Different circuit designing & testing. |
| 3. | **Operate Computer parts & peripherals** | 1. Familiar to Microsoft Office 2007 package.
2. Switch mode power supply
3. Mother Board & Microprocessor
4. Internal Memory
5. Hard Disk Drive & SSD
6. Compact Disk Drives, DVD, BRD
7. Display Devices
8. Printer & Scanner
9. Keyboard & Mouse
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11. Assembling & De assemble
12. Laptop Overview
 | 1. Getting confidence to use Microsoft word, Excel, PowerPoint & internet for official purpose
2. Design the unregulated power supply testing,
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10. Making bootable & non bootable disk.
11. Repairing knowledge for CD & DVD drives.
12. Keyboard internal structure with arrangement
13. Doing the assemble & disassemble separately
14. Assemble & disassemble of laptops with parts identification.
 |
| 4. | **Operating System** | 1. Introduction to operating system & features
2. Knowing about file system & its use
3. Loading of Operating systems
4. Introduce with all managerial configuration for all operating systems.
5. Linux
 | 1. Partitioning & formatting of hdd.
2. Loading of Windows Operating systems.
3. O.S Repairing
4. Dual Booting , making of flash drive bootable.
5. Drivers & Application software installation.
6. Creating users, using the administrative management, control panel etc..
7. Installation of external Hardware devices.
8. Using the system tools for trouble shooting.
9. Data Recovery. Data Backup,
10. Practice with Linux
 |
| 5. | **Network Essential** | 1.Introduction to Network2.Overview on Network topology3.Classification of topology4.Overview on network protocol 5.Types of devices 6. Repeater, hub, switches & Router etc 7. Introduction of transmission media8. Classification of transmission media.9. Details about OSI reference model.10. TCP/IP model11. Computer Addressing details.12. IPv4 addressing 13. IPv6 addressing  | 1.Physical design the topology and identification 2. Installation of network devices and Nic cards.3. Installation of network media.4. Colour coding method and RJ-45 connection.6. I/O box configuration.7. IP subnetting.8. IPv4 address configurationIn different windows OS.9. Mac addresses verification. 10. IPv4 connectivity & troubleshooting.11. IPV6 configuration. |
| 6. | **Windows Networking**  | 1. Basic idea about all the network physical accessing and configuration. | 1. File and folder sharing on WIN. XP, 7, 8 etc.2. File and folder accessing WIN. XP, 7, 8 etc3. Permission on share folder and drive for different OS WIN. XP, 7, 8 etc.4. Remote desktop between two pc.5. Remote assistance.6. Window messenger.8. Offline files sharing.9. Netmeeting connection.10. Windows Telnet.  |
| 7. | **Server and client networking**  | 1. Server and client basic idea.2. DNS 3. DNS namespace.4. Active directory.5. DHCP. | 1. Window Server 2003 and 2008 installation2. DNS configuration3. Primary and secondary DNS configuration 4.Active directory domain controller configuration5. Client connection to the server. 6. Creat user and group on server.7. User and group permission, data accessing permission.8. Group policy configuration.9.DHCP server configuration and client connection10. DHCP reservation and exclusion.11. FTP server. 12. WDS server configuration and remote installation of OS in client system12. Wireless LAN configuration. |
| 8. | **CCNA R & S (M-1)**  | 1.Introduction to the Net space2. Network Layers & protocols3. IP Addressing4. FLSM & VLSM | 1. IP subnetting.2. IPv4 address configuration.3. Mac addresses verification. 4. IPv4 connectivity & troubleshooting.5. IPV6 configuration.6. Colour coding method and RJ-45 connection |
| 9. | **CCNA R & S (M-2)**  | 1. Basic Switching Concept.
2. Switch Configuration & security
3. Basic Routing Concept
4. Implementing of Routing Protocols
 | 1. Basic configuration of switch on packet tracer.2. All types of security and password configuration.3. VlAN implement and connection.4. Native vlan and port trunking.5. Physical switch implementation.6. Static and dynamic routing.7. RIP, EIGRP, OSPF etc.8. Physical router configuration and using of routing protocols.  |
| 10. | **CCNA R & S (M-3)**  | 1. Advance switching Concept2. Advance Routing Protocols3. Wireless networking | 1. VTP Configuration2. STP & PVST3. ETHER channel and link aggregation4. HSRP 5. Multi area OSPF.6. Advance Eigrp.7. Wireless configuration |
| 11. | **CCNA R & S (M-4)**  | 1. IOS Information.2.WAN Communication  | 1. IOS Backup and Restore in switch and router.2. PAP And CHAP configuration3. Frame Relay configuration4. NAT and PAT configuration.5. PPOE6. IPSEC. |  |  |
| 12. | **PROJECT WORK**  | Idea about the project  | Project work & competition. |

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