

# COMPUTER NETWORKING TECHNICIAN

COMPETENCY BASED CURRICULUM

(Duration: 1 Year 3 Months)

APPRENTICESHIP TRAINING SCHEME (ATS)

NSQF LEVEL- 4



SECTOR – IT AND ITES



GOVERNMENT OF INDIA  
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP  
DIRECTORATE GENERAL OF TRAINING

**COMPUTER NETWORKING TECHNICIAN**

# **COMPUTER NETWORKING TECHNICIAN**

(Revised in 2018)

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**NSQF LEVEL - 4**

**Skill India**  
कौशल भारत - कुशल भारत

Developed By

Ministry of Skill Development and Entrepreneurship  
Directorate General of Training  
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## COMPUTER NETWORKING TECHNICIAN

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2. Christioni Sharpline Tech Pvt. Ltd, Navi Mumbai.
3. Abvolt India Pvt Ltd, Vikroli Mumbai
4. Global Techgies, Vashi, Navi Mumbai
5. Festo India Pvt. Ltd, Santacruz Mumbai

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### 1.1 Apprenticeship Training Scheme under Apprentice Act 1961

The Apprentices Act, 1961 was enacted with the objective of regulating the programme of training of apprentices in the industry by utilizing the facilities available therein for imparting on-the-job training. The Act makes it obligatory for employers in specified industries to engage apprentices in designated trades to impart Apprenticeship Training on the job in industry to school leavers and person having National Trade Certificate(ITI pass-outs) issued by National Council for Vocational Training (NCVT) to develop skilled manpower for the industry. There are four categories of apprentices namely; **trade apprentice, graduate, technician and technician (vocational) apprentices.**

Qualifications and period of apprenticeship training of **trade apprentices** vary from trade to trade. The apprenticeship training for trade apprentices consists of basic training followed by practical training. At the end of the training, the apprentices are required to appear in a trade test conducted by NCVT and those successful in the trade tests are awarded the National Apprenticeship Certificate.

The period of apprenticeship training for graduate (engineers), technician (diploma holders and technician (vocational) apprentices is one year. Certificates are awarded on completion of training by the Department of Education, Ministry of Human Resource Development.

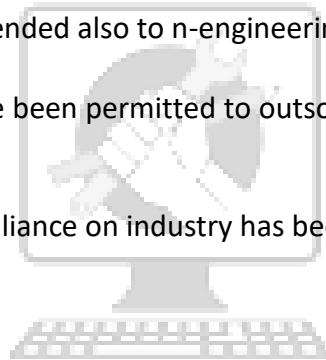
### 1.2 Changes in Industrial Scenario

Recently we have seen huge changes in the Indian industry. The Indian Industry registered an impressive growth during the last decade and half. The number of industries in India have increased manifold in the last fifteen years especially in services and manufacturing sectors. It has been realized that India would become a prosperous and a modern state by raising skill levels, including by engaging a larger proportion of apprentices, will be critical to success; as will stronger collaboration between industry and the trainees to ensure the supply of skilled workforce and drive development through employment. Various initiatives to build up an adequate infrastructure for rapid industrialization and improve the industrial scenario in India have been taken.

### 1.3 Reformation

The Apprentices Act, 1961 has been amended and brought into effect from 22<sup>nd</sup> December, 2014 to make it more responsive to industry and youth. Key amendments are as given below:

- Prescription of number of apprentices to be engaged at establishment level instead of trade-wise.
- Establishment can also engage apprentices in optional trades which are designated, with the discretion of entry level qualification and syllabus.
- Scope has been extended also to non-engineering occupations.
- Establishments have been permitted to outsource basic training in an institute of their choice.
- The burden of compliance on industry has been reduced significantly.



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### 2.1 GENERAL

Directorate General of Training (DGT) under Ministry of Skill Development & Entrepreneurship offers range of vocational training courses catering to the need of different sectors of economy/ Labour market. The vocational training programmes are delivered under aegis of National Council of Vocational Training (NCVT). Craftsman Training Scheme (CTS) and Apprenticeship Training Scheme (ATS) are two pioneer programmes of NCVT for propagating vocational training.

Computer Networking Technician trade under ATS is one of the most popular courses delivered nationwide through different industries. The course is of two years (01 Block) duration. It mainly consists of Domain area and Core area. In the Domain area Trade Theory & Practical impart professional - skills and knowledge, while Core area - Workshop Calculation and science, Engineering Drawing and Employability Skills imparts requisite core skills & knowledge and life skills. After passing out the training programme, the trainee is being awarded National Apprenticeship Certificate (NAC) by NCVT having worldwide recognition.

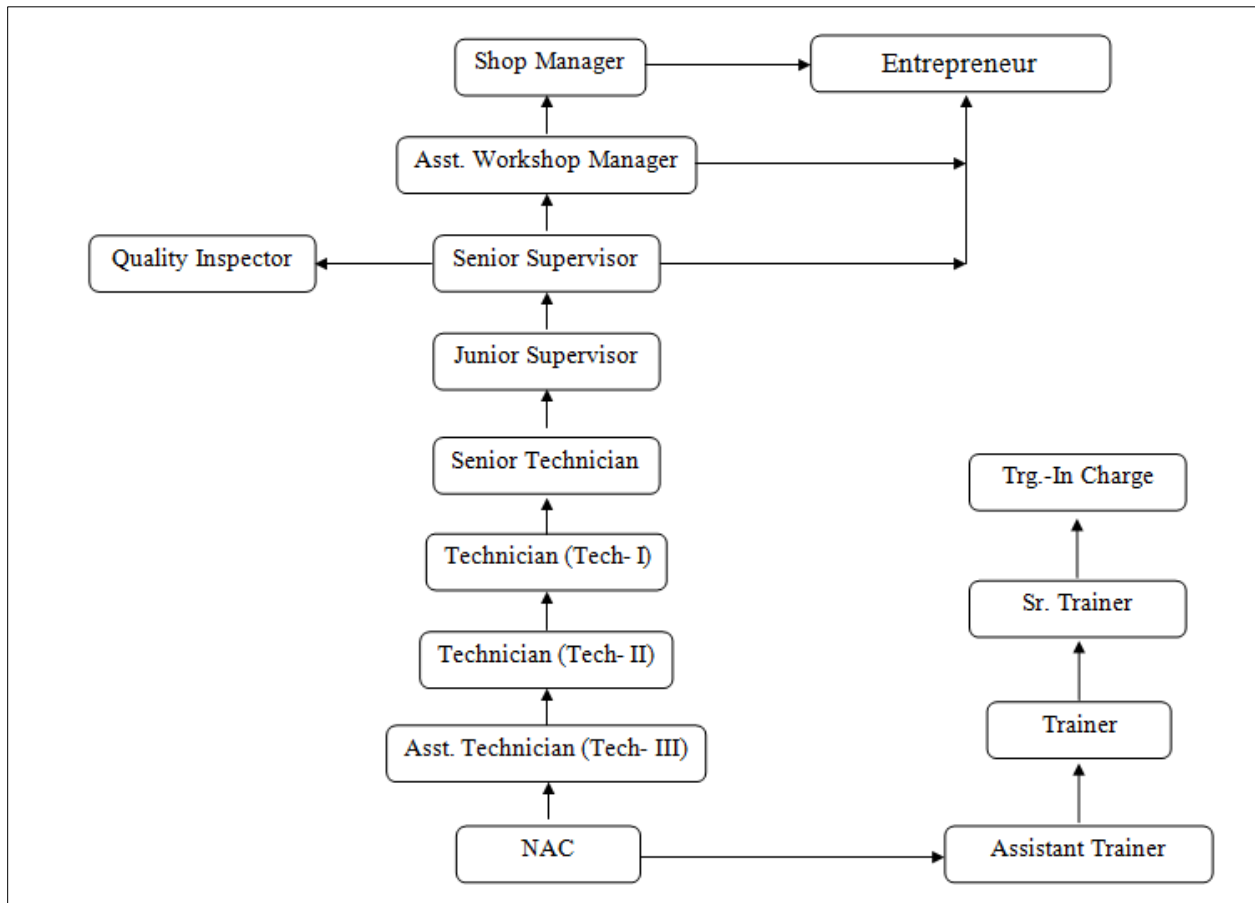
#### **Broadly candidates need to demonstrate that they are able to:**

- Read & interpret technical parameters/document, plan and organize work processes, identify necessary materials and tools;
- Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations;
- Apply professional skill, knowledge, core skills & employability skills while performing jobs and solve problem during execution.
- Check the job/assembly as per drawing for functioning, identify and rectify errors in job/assembly.
- Document the technical parameters related to the task undertaken.

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## 2.2 CAREER PROGRESSION PATHWAYS:

- Indicative pathways for vertical mobility.



## 2.3 COURSE STRUCTURE:

Table below depicts the distribution of training hours across various course elements during a period of one year (*Basic Training and On-Job Training*) :-

**Total training duration details: -**

Time (in months)	1-3	4 - 15
Basic Training	Block- I	-----
Practical Training (On - job training)	----	Block - I



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### A. Basic Training:-

For 02 yrs. course (Engg.) : (Total 06 months: 03 months in 1<sup>st</sup>yr. + 03 months in 2<sup>nd</sup> yr.)

For 01 yr. course (Engg.) : (Total 03 months: 03 months in 1<sup>st</sup>yr.)

Sl. No.	Course Element	Total tional Training Hours	
		For 02 Yrs. course	For 01 Yr. course
1.	Professional Skill (Trade Practical)	550	275
2.	Professional Knowledge (Trade Theory)	240	120
3.	Workshop Calculation & Science	40	20
4.	Engineering Drawing	60	30
5.	Employability Skills	110	55
	<b>Total (Including internal assessment)</b>	<b>1000</b>	<b>500</b>

### B. On-Job Training:-

For 02 yrs. Course (Engg.) : (Total 18 months: 09 months in 1<sup>st</sup>yr. + 09 months in 2<sup>nd</sup> yr.)  
tional Training Hours for On-Job Training: 3120 Hrs.

For 01 yr. course (Engg.) : (Total 12 months)  
tional Training Hours for On-Job Training: 2080 Hrs.

### C. Total training hours:-

Duration	Basic Training	On-Job Training	Total
For 02 yrs. course (Engg.)	1000 hrs.	3120 hrs.	4120 hrs.
For 01 yr. course (Engg.)	500 hrs.	2080 hrs.	2580 hrs.

## 2.4 ASSESSMENT & CERTIFICATION:

The trainee will be tested for his skill, knowledge and attitude during the period of course and at the end of the training programme as certified by Govt of India from time to time. The Employability skills will be tested in first two semesters only.

- The Internal assessment during the period of training will be done by Formative assessment method by testing for assessment criteria listed against learning outcomes. The training institute have to maintain individual *trainee portfolio* as detailed in

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assessment guideline. The marks of internal assessment will be as per the template (Annexure – II).

- b) The final assessment will be in the form of summative assessment method. The All India Trade Test for awarding NAC will be conducted by NCVT on completion of course as per guideline of Govt of India. The pattern and marking structure is being certified by govt of India from time to time. The learning outcome and assessment criteria will be basis for setting question papers for final assessment. The examiner during final examination will also check individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

### **2.4.1 PASS REGULATION**

The minimum pass percent for Practical is 60% & minimum pass percent for Theory subjects 40%. The candidate pass in each subject conducted under all India trade test.

### **2.4.2 ASSESSMENT GUIDELINE**

Appropriate arrangements should be made to ensure that there will be artificial barriers to assessment. The nature of special needs should be taken into account while undertaking assessment. Due consideration should be given while assessing for team work, avoidance/reduction of scrap/wastage and disposal of scarp/wastage as per procedure, behavioral attitude, sensitivity to environment and regularity in training. The sensitivity towards OSHE and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based comprising the following:

- Job carried out in labs/workshop
- Record book/ daily diary
- Answer sheet of assessment
- Viva-voce
- Progress chart
- Attendance and punctuality
- Assignment
- Project work

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Evidences of internal assessments are to be preserved until forthcoming semester examination for audit and verification by examination body. The following marking pattern to be adopted while assessing:

Performance Level	Evidence
<b>(a) Weightage in the range of below 70% to be allotted during assessment</b>	
For performance in this grade, the candidate with occasional guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of an acceptable standard of craftsmanship.	<ul style="list-style-type: none"> <li>• Demonstration of good skill in the use of hand tools, machine tools and workshop equipment</li> <li>• Below 70% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards.</li> <li>• A fairly good level of neatness and consistency in the finish</li> <li>• Occasional support in completing the project/job.</li> </ul>
<b>(b) Weightage in the range of above 70% - 80% to be allotted during assessment</b>	
For this grade, the candidate, with little guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of a reasonable standard of craftsmanship.	<ul style="list-style-type: none"> <li>• Good skill levels in the use of hand tools, machine tools and workshop equipment</li> <li>• 70-80% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards.</li> <li>• A good level of neatness and consistency in the finish</li> <li>• Little support in completing the project/job</li> </ul>
<b>(c) Weightage in the range of above 80% to be allotted during assessment</b>	
For performance in this grade, the candidate, with minimal or support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.	<ul style="list-style-type: none"> <li>• High skill levels in the use of hand tools, machine tools and workshop equipment</li> <li>• Above 80% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards.</li> <li>• A high level of neatness and consistency in the finish.</li> <li>• Minimal or support in completing the project.</li> </ul>

Brief description of Job roles of Computer Networking Technician After completion of the course the apprentices shall be qualified for one or more of the following job roles:

- Computer Networking Technician personnel is to support and maintain computer network systems and related devices.
- The person includes installing, configuring, operating, repairing, diagnosing, maintaining, and upgrading all network devices and equipment while ensuring optimal workstation performance.
- The person will also troubleshoot problem areas in a timely and accurate fashion, and provide end user training and assistance where required. Install, maintain and setup LAN with Internet Connection.
- Determining and installing appropriate security measures.
- Provide technical support on-site or via phone or email
- Install, configure, and maintain common end user application software. May train and provide assistance to end users.
- Troubleshoots software and hardware problems related to Internet applications.
- Ability to control network programs, network management, and network architecture

**Reference NCO – 2015:**

- i) 2523.9900 (Computer Network Professionals, Other)
- ii) 3513.9900 (Computer Network and systems Technician, Other)

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**4. NSQF LEVEL COMPLIANCE**

NSQF level for Computer Networking Technician trade under ATS: **Level 4**

As per certification issued by Govt. of India dated- 27.12.2013 on National Skill Qualification Framework total 10 (Ten) Levels are defined.

Each level of the NSQF is associated with a set of descriptors made up of five outcome statements, which describe in general terms, the minimum knowledge, skills and attributes that a learner needs to acquire in order to be certified for that level.

Each level of the NSQF is described by a statement of learning outcomes in five domains, known as level descriptors. These five domains are:

- a. Process
- b. Professional knowledge,
- c. Professional skill,
- d. Core skill and
- e. Responsibility.



The Broad Learning outcome of Computer Networking Technician trade under ATS mostly matches with the Level descriptor at Level- 4.

The NSQF level-4 descriptor is given below:

Level	Process Required	Professional Knowledge	Professional Skill	Core Skill	Responsibility
Level 4	Work in familiar, predictable, routine, situation of clear choice.	Factual knowledge of field of knowledge or study	Recall and demonstrate practical skill, routine and repetitive in narrow range of application, using appropriate rule and tool, using quality concepts	Language to communicate written or oral, with required clarity, skill to basic Arithmetic and algebraic principles, basic understanding of social political and natural environment.	Responsibility for own work and learning.

**5. GENERAL INFORMATION**

<b>Name of the Trade</b>	Computer Networking Technician
<b>NCO - 2015</b>	2523.9900, 3513.9900
<b>NSQF Level</b>	Level – 4
<b>Duration of Apprenticeship Training</b> (Basic Training + On-Job Training)	3 months + One year (01 Block of 12 month duration).
<b>Duration of Basic Training</b>	a) Block –I : 3 months <b>Total duration of Basic Training: 3 months</b>
<b>Duration of On-Job Training</b>	a) Block–I: 12 months <b>Total duration of Practical Training: 12 months</b>
<b>Entry Qualification</b>	Passed 10th class examination under 10+2 system of education or its equivalent
<b>Selection of Apprenticeship</b>	The apprentices will be selected as per Apprenticeship Act amended time to time.
<b>Instructors Qualification for Basic Training</b>	As per ITI instructors qualifications as amended time to time for the specific trade.
<b>Examination</b>	The internal examination/ assessment will be held on completion of each block. Final examination for all subjects will be held at the end of course and same will be conducted by NCVT.
<b>Rebate to Ex-ITI Trainees</b>	03 months
<b>CTS trades eligible for Computer Networking Technician Apprenticeship</b>	<ul style="list-style-type: none"> <li>• Information Technology</li> <li>• Computer Hardware and Network Maintenance</li> </ul>

**Note:**

- Industry may impart training as per above time schedule for different block, however this is to be fixed. The industry may adjust the duration of training considering the fact that all the components under the syllabus must be covered. However the flexibility should be given keeping in view that safety aspect is compromised.
- For imparting Basic Training the industry to tie-up with ITIs having such specific trade and affiliated to NCVT.

**6.1 GENERIC LEARNING OUTCOME**

The following are minimum broad Common Occupational Skills/ Generic Learning Outcome after completion of the Computer networking technician course of 01 years duration under ATS.

**Block I:-**

1. Recognize & comply safe working practices, environment regulation and housekeeping.
2. Understand and explain different mathematical calculation & science in the field of study including basic electrical. *[Different mathematical calculation Algebra, decimal, binary addition & subtraction , concept of storage units, calculation hard disk capacity , Use of Electricity, Types of current AC, DC, , voltage, resistance, types of connections - series, parallel, electric power, unit of electrical energy. Concept of earthing,]*
3. Interpret specifications, different engineering drawing and apply for different application in the field of work. *[Different engineering drawing-Geometrical construction, Dimensioning, Free hand sketching of straight lines, dotted lines, chain lines, rectangles, square, circles, polygons etc, Diagram of a Hard disk, diagram of internal components and structure Block diagram of SMPS and diagram of various power connectors, Estimation of material, Electrical & electronic symbol]*
4. Select and ascertain measuring instrument and measure dimension of components and record data.
5. Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.
6. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.
7. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.
8. Plan and organize the work related to the occupation.

## 6.2 SPECIFIC LEARNING OUTCOME

### Block – I

1. Safety and best practices (5S, KAIZEN etc.)
2. Record keeping and documentation
3. Identify and test the Computer devices/ components
4. Repair & Maintenance work
5. Install the Linux/Windows Operating System; configure server, adding user, Creating and managing user, effective access permission.
6. Create and manage the network shares, share permission, domain user account configuration, user account properties, domain groups, managing ports, installing and configuration of printer, scanner, disk management tools and tasks, implementing file and folders share permission, using device manager, drivers, signature verification.
7. Work and configure the various types of network devices like Ethernet cards, routers, manageable switches, HUB, gateways, firewalls, modems, connector and cables.
8. Make network cable by crimping the straight and cross CAT 5 cables and punching with IO Box, HUB/Switch and patch panel.
9. Configure a peer to peer network, data communication, connecting computers with network through cable and using Wi-Fi configuration.
10. Configure IP address (IP4/IP6) to IP routing, subnetting and supernetting the network, managing TCP/IP protocol.
11. Install & configure terminal services, managing server remotely using terminal services (remote desktop) backup restoring data installing DNS, networks installing & configuring DHCP, remote access & VPN configuring & implementing remote access server configuring.
12. Share resource and advance sharing setting, installing proxy server, installing and configuring internet connection on a PC using Broadband or Dongle.
13. Set up basic protection using public keys and MAC address filters. Integrate wired with wireless network. Power over Ethernet (PoE). Troubleshooting wired and wireless network.
14. Identify fault and Trouble shooting in different types of networks. Troubleshooting of network and its configuration and different types of cabling techniques. Working with hardware of servers and its configuration.
15. Set up the basic collaboration tool like NetMeeting for activities like chat, application sharing, remote desktop access and control, VoIP. Setup IP camera for basic surveillance scenario, logging and monitoring of devices / locations.
16. Practice on firewall technologies to secure the network perimeter, Practice LAN and Wi-Fi configuration to implement security considerations.

**Note:** Learning outcomes are reflection of total competencies of a trainee and assessment will be carried out as per assessment criteria.



**7. LEARNING OUTCOME WITH ASSESSMENT CRITERIA**

<b>GENERIC LEARNING OUTCOME</b>	
<b>LEARNING OUTCOMES</b>	<b>ASSESSMENT CRITERIA</b>
1. Recognize & comply safe working practices, environment regulation and housekeeping.	1. 1. Follow and maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements.
	1. 2. Recognize and report all unsafe situations according to site policy.
	1. 3. Identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures.
	1. 4. Identify, handle and store / dispose off dangerous/unsalvageable goods and substances according to site policy and procedures following safety regulations and requirements.
	1. 5. Identify and observe site policies and procedures in regard to illness or accident.
	1. 6. Identify safety alarms accurately.
	1. 7. Report supervisor/ Competent of authority in the event of accident or sickness of any staff and record accident details correctly according to site accident/injury procedures.
	1. 8. Identify and observe site evacuation procedures according to site policy.
	1. 9. Identify Personal Protective Equipment (PPE) and use the same as per related working environment.
	1. 10. Identify basic first aid and use them under different circumstances.
	1. 11. Identify different fire extinguisher and use the same as per requirement.
	1. 12. Identify environmental pollution & contribute to avoidance of same.
	1. 13. Take opportunities to use energy and materials in an environmentally friendly manner
	1. 14. Avoid waste and dispose waste as per procedure
	1. 15. Recognize different components of 5S and apply the same in the working environment.
2. Understand, explain different mathematical calculation & science in the field of study including basic	2. 1. Explain concept of basic science related to the field such as Material science, heat & temperature, motion, pressure, heat treatment, centre of gravity.
	2. 2. Measure dimensions as per drawing

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<p>electrical and apply in day to day work. <i>[Different mathematical calculation Algebra, Geometry &amp; Mensuration, Trigonometry, Heat &amp; Temperature, concept of storage units, calculation hard disk capacity ,Use of Electricity, Types of current- AC, DC, , voltgae, resistance, types of connections - series, parallel, electric power, unit of electrical energy. Concept of earthing]</i></p>	2. 3. Use scale/ tapes to measure for fitting to specification.
	2. 4. Comply given tolerance.
	2. 5. Prepare list of appropriate materials by interpreting detail drawings and determine quantities of such materials.
	2. 6. Ensure dimensional accuracy of assembly by using different instruments/gauges.
	2. 7. Explain basic electricity, insulation & earthing.
<p>3. Interpret specifications, different engineering drawing and apply for different application in the field of work. <i>[Different engineering drawing- Geometrical construction, Dimensioning, Free hand sketching of straight lines, dotted lines, chain lines, rectangles, square, circles, polygons etc, Diagram of a Hard disk, diagram of internal components and structure Block diagram of SMPS and diagram of various power connectors, Estimation of material, Electrical &amp; electronic symbol]</i></p>	3. 1. Read & interpret the information on drawings and apply in executing practical work.
	3. 2. Read & analyse the specification to ascertain the material requirement, tools, and machining /assembly /maintenance parameters.
	3. 3. Encounter drawings with missing/unspecified key information and make own calculations to fill in missing dimension/parameters to carry out the work.
<p>4. Select and ascertain measuring instrument to detect fault or to perform electrical and electronic work.</p>	4. 1. Select appropriate measuring instruments such as digital ammeter, ohmmeter, multimeter, continuity tester, logic probe, network analyser, etc. (as per tool list).
	4. 2. Ascertain the functionality & correctness of the instrument.
	4. 3. Measure dimension of the components & record data to analyse them with given drawing/measurement.
<p>5. Explain the concept in productivity, quality tools, and</p>	<p>5. 1. Explain the concept of productivity and quality tools and apply during execution of job.</p>

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labour welfare legislation and apply such in day to day work to improve productivity & quality.	5. 2. Understand the basic concept of labour welfare legislation and adhere to responsibilities and remain sensitive towards such laws.
	5. 3. Knows benefits guaranteed under various acts.
6. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.	6. 1. Explain the concept of energy conservation, global warming, pollution and utilize the available recourses optimally & remain sensitive to avoid environment pollution.
	6. 2. Dispose waste following standard procedure.
7. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.	7. 1. Explain personnel finance and entrepreneurship.
	7. 2. Explain role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ n financing support agencies to familiarizes with the Policies /Programmes & procedure & the available scheme.
	7. 3. Prepare Project report to become an entrepreneur for submission to financial institutions.
8. Plan and organize the work related to the occupation.	8. 1. Use documents, drawings and recognize hazards in the work site.
	8. 2. Plan workplace/ assembly location with due consideration to operational stipulation
	8. 3. Communicate effectively with others and plan project tasks
	8. 4. Assign roles and responsibilities of the co-trainees for execution of the task effectively and monitor the same.
<b>SPECIFIC OUTCOME</b>	
<b>Block-I (Section:10 in the competency based curriculum)</b>	
<p><i>Assessment Criteria i.e. the standard of performance, for each specific learning outcome mentioned under <b>Block – I</b> (section: 10) must ensure that the trainee works in familiar, predictable, routine, situation of clear choice. Assessment criteria should broadly cover the aspect of <b>Planning</b> (Identify, ascertain, etc.); <b>Execution</b> apply factual knowledge of field of knowledge, recall and demonstrate practical skill during performing the work in routine and repetitive in narrow range of application, using appropriate rule and tool, complying with basic arithmetic and algebraic principles and language to communicate in written or oral with required clarity; <b>Checking/ Testing</b> to ensure functionality during the assessment of each outcome. The assessments parameters must also ascertain that the candidate is responsible for his/her own work and learning.</i></p>	

**BASIC TRAINING (Block – I)****Duration: (03) Three Months**

<b>Week</b>	<b>Professional Skills (Trade Practical)</b>	<b>Professional Knowledge (Trade Theory)</b>
1.	<b>Linux operating system</b> - Installing UNIX / LINUX - Preparing functional system UNIX/LINUX - Adding new users, software, material components - Making back-up copies of the index and files - Dealing with the files and indexes	<b>Linux operating system</b> - Basic Linux commands. - Linux file system, The Shell, Users and file permissions, vi editor, X window system, Filter Commands, Processes, Shell Scripting.
2.	<b>Components of the Computer Network.</b> Familiarization with various Network devices, Connectors and Cables. Understanding the Layout of network.	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, Ethernet, Wi-Fi, Bluetooth, Mobile Networking, Wire and wireless Networking. Difference between Intranet and Internet.
3.	<b>Crimping &amp; Punching</b> Crimping practice with straight and cross CAT 5 cables. Punching practice in IO Box and patch panel. Crimping and making cables. <b>Cabling</b> Create cabling in a lab with HUB/Switch and IO Boxes and patch panel. Fitting Switch Rack.	Communication Media & Connectors – Unshielded twisted-pair (UTP), shielded twisted-pair (STP), Fiber Optics and coaxial cable: RJ-45, RJ-11, BNC. Understanding color codes of CAT5 cable. 568A and 568B convention. Introduction to Data Communication – Analog and Digital Signals, Simplex, Half-Duplex and Full-Duplex transmission mode.
4.	<b>Install &amp; configure a Network.</b> Installing & Configuring a Peer-to-Peer Network using Windows Software. Making cables by crimping. Connect computers using Bluetooth.	OSI Model - The functions of different layers in OSI model
5.	<b>Configuration of Data communication equipments.</b>	Network Components – Modems, Firewall, Hubs, Bridges, Routers, Gateways,

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	<p>Connecting computers with Network with Drop cable and using Wi Fi configuration.</p> <p>Basic Programmable switch Configuration</p> <p>Spanning Tree Protocol ( STP )</p> <p>Command Line Interface</p> <p>IP Routing Process</p> <p>Verifying Configuration</p>	<p>Repeaters, Transceivers, Switches, Access point, etc. – their types, functions, advantages and applications.</p> <p>IP Routing in Network RIP IGRP</p>
6.	<p><b>IP Addressing &amp; TCP/IP</b></p> <p>IP Addressing technique(IP4/IP6) and Subnetting and Supernetting the network.</p> <p>Installation and Configuration of TCP/IP Protocol. Practice TCP/ IP Utilities : PING, IPCONFIG, HOSTNAME, ROUTE, TRACERT etc.</p>	<p>Protocols, TCP/IP, FTP, Telnet etc., Theory on Setting IP Address(IP4/IP6) &amp; Subnet Mask, Classes of IP Addressing.</p>
7.	<p><b>Other Network Protocols</b></p> <p>Working with SMTP, TELNET, FTP, HTTP, SNMP, LDAP etc.</p> <p>Practice on configuring DHCP.</p>	<p>Simple Mail Transfer Protocol (SMTP), Telnet, File Transfer Protocol (FTP), Hyper Text Transfer Protocol (HTTP), Simple Network Management Protocol (SNMP). LDAP(Lightweight Directory Access Protocol). Introduction to Network Security. Concept of Dynamic Host Control Protocol.</p>
8.	<p><b>Sharing Resource &amp; Internet connection.</b></p> <p>Sharing Resource and Advance Sharing Setting.</p> <p>Installing Proxy Server.</p> <p>Exposure and using Internet. Setting E-mail accounts. Conferencing.</p> <p>Installing and Configuring Internet Connection on a PC using Broadband or Dongle.</p>	<p>Concept of Internet. Architecture of Internet. DNS Server. Internet Access Techniques, ISPs and examples (Broadband/Dialup/Wifi).</p> <p>Concept of Social Networking Sites, Video Calling &amp; Conferencing.</p> <p>Concept of VIRUS and its Protection using Anti Virus, UTM and Firewall.</p>
9.	<p><b>Network Protection and troubleshooting.</b></p> <p>Setting up basic protection using public keys and MAC address filters.</p> <p>Integrate wired with wireless network. Power over Ethernet (PoE).</p> <p>Troubleshooting wired and wireless network.</p>	<p>Collaborating using wired and wireless networks, Protecting a Network, Network performance study and enhancement.</p>
10.	<p><b>Control &amp; monitoring of network devices.</b></p>	<p>Surveillance using network devices, collaboration on network for team</p>

## COMPUTER NETWORKING TECHNICIAN

	Setting up of basic collaboration tool like NetMeeting for activities like chat, application sharing, remote desktop access and control, VoIP. Setup IP camera for basic surveillance scenario, logging and monitoring of devices / locations. Use Linux Network Tools to check / maintain / Manage Network.	optimization and support activities. Remote management of devices.
11.	<b>Install and configure Windows Server</b> Configure services like Active Directory, DNS and DHCP. Configuration of broadband modem and sharing internet connection.	Server concepts, Installation steps, configuration of server. Concept of Active Directory and DNS. Setting up of DHCP, Routing and remote access.
12.	<b>Network Security</b> Practice on firewall technologies to secure the network perimeter. Practice LAN security considerations and implement endpoint and Layer 2 security features. Wi-fi configuration to implement security considerations.	Network Security Modern Network Security Threats and the basics of securing a network. Secure Administrative Access, LAN security considerations. Cryptography. Wi-fi security considerations.
13	<b>Revision &amp; Internal Assessments</b>	

**NOTE:** - More emphasis to be given on video/real-life pictures during theoretical classes. Some real-life pictures/videos of related industry operations may be shown to the trainees to give a feel of Industry and their future assignment.

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**9.1 WORKSHOP CALCULATION SCIENCE & ENGINEERING DRAWING**

Topic No.	Engineering Drawing	Workshop Science & Calculation
1.	<p>Engineering Drawing: Introduction and its importance.                      Different types of standards used in engineering drawing.                      Drawing Instruments: their uses Drawing board, T-Square, Drafter (Drafting M/c), Set Squares, Protractor, Drawing Instrument Box (Compass, Dividers, Scale, Diagonal Scales etc.), Pencils of different Grades, Drawing pins / Clips.</p>	<p>Addition, Subtraction, Multiplication, Division, Algebraic formula, Linear equations (with two variables).                      Quadratic equation, Simultaneous linear equation in two variables.                      Arithmetic and geometric progression, sum of n terms, simple calculations.</p>
2.	<p>Free hand sketching of straight lines, dotted lines, chain lines, rectangles, square, circles, polygons etc.                      Free hand sketching of tools, simple solids with dimensions. Free hand sketch of solids viewed perpendicularly to their surface and axes.</p>	<p>Concept of storage units(bit, byte etc.), decimal to binary, binary to decimal, decimal to hexadecimal, hexadecimal to decimal.                      Binary addition and subtraction.</p>
3.	<p>Flow charts showing steps in sample programs. Block diagram of personal computer, drawings of keyboard, monitor, mouse, FDD, HDD, CD ROM. Front and Rear view of a PC.</p>	<p>Calculation of Hard disk capacity, Read/write time, latency time, seek time. Definition of Scalar and Vector, tations. Addition and subtraction of vectors.</p>
4.	<p>Diagram of a Hard disk, diagram of internal components and structure. Pin diagram and block diagram of RAM, ROM, EPROM, Dynamic ROM Chips. Diagram of servo motor and stepper motor with external connections.</p>	<p>Specifications and Rating of SMPS. Power Good.                      Interpersonal relationship and group behaviours.</p>
5.	<p>Top view of a motherboard showing chip set and slots etc.                      Diagram of different connectors, CPU sockets.                      Front and Rear view of a Laptop PC.</p>	<p>Dynamic and Static RAM.                      Quality control standard and institutions.                      Calculation of the capacity of RAM.</p>
6.	<p>Block diagram of SMPS and diagram of various power connectors. 3 d view of SMPS                      Top view of a mother board showing chip set and slots etc Diagram of different connectors, CPU sockets.</p>	<p>Use of Electricity, Types of current_ AC, DC, their comparison, voltage, resistance, types of connections - series, parallel, electric power, unit of electrical energy. Concept of earthling.</p>

## COMPUTER NETWORKING TECHNICIAN

### 9.2 EMPLOYABILITY SKILLS

(DURATION: - 110 HRS.)

<b>Block – I</b> <b>(Duration – 55 hrs.)</b>	
<b>1. English Literacy</b>	
Duration : 20 Hrs.	Marks : 09
<b>Pronunciation</b>	Accentuation (mode of pronunciation) on simple words, Diction (use of word and speech)
<b>Functional Grammar</b>	Transformation of sentences, Voice change, Change of tense, Spellings.
<b>Reading</b>	Reading and understanding simple sentences about self, work and environment
<b>Writing</b>	Construction of simple sentences Writing simple English
<b>Speaking / Spoken English</b>	Speaking with preparation on self, on family, on friends/ classmates, on know, picture reading gain confidence through role-playing and discussions on current happening job description, asking about someone's job habitual actions. Cardinal (fundamental) numbers ordinal numbers. Taking messages, passing messages on and filling in message forms Greeting and introductions office hospitality, Resumes or curriculum vita essential parts, letters of application reference to previous communication.
<b>2. I.T. Literacy</b>	
Duration : 20 Hrs.	Marks : 09
<b>Basics of Computer</b>	Introduction, Computer and its applications, Hardware and peripherals, Switching on-Starting and shutting down of computer.
<b>Computer Operating System</b>	Basics of Operating System, WINDOWS, The user interface of Windows OS, Create, Copy, Move and delete Files and Folders, Use of External memory like pen drive, CD, DVD etc, Use of Common applications.
<b>Word processing and Worksheet</b>	Basic operating of Word Processing, Creating, opening and closing Documents, use of shortcuts, Creating and Editing of Text, Formatting the Text, Insertion & creation of Tables. Printing document. Basics of Excel worksheet, understanding basic commands, creating simple worksheets, understanding sample worksheets, use of simple formulas and functions, Printing of simple excel sheets.
<b>Computer</b>	Basic of computer Networks (using real life examples), Definitions of



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<b>Networking and Internet</b>	Local Area Network (LAN), Wide Area Network (WAN), Internet, Concept of Internet (Network of Networks), Meaning of World Wide Web (WWW), Web Browser, Web Site, Web page and Search Engines. Accessing the Internet using Web Browser, Downloading and Printing Web Pages, Opening an email account and use of email. Social media sites and its implication. Information Security and antivirus tools, Do's and Don'ts in Information Security, Awareness of IT - ACT, types of cyber crimes.
<b>3. Communication Skills</b>	
Duration : 15 Hrs. <span style="float: right;">Marks : 07</span>	
Introduction to Communication Skills	Communication and its importance Principles of Effective communication Types of communication - verbal, n verbal, written, email, talking on phone. n verbal communication -characteristics, components-Para-language Body language Barriers to communication and dealing with barriers. Handling nervousness/ discomfort.
Listening Skills	Listening-hearing and listening, effective listening, barriers to effective listening guidelines for effective listening. Triple- A Listening - Attitude, Attention & Adjustment. Active Listening Skills.
Motivational Training	Characteristics Essential to Achieving Success. The Power of Positive Attitude. Self awareness Importance of Commitment Ethics and Values Ways to Motivate Oneself Personal Goal setting and Employability Planning.
Facing Interviews	Manners, Etiquettes, Dress code for an interview Do's & Don'ts for an interview.
Behavioral Skills	Problem Solving Confidence Building Attitude
<b>4. Entrepreneurship Skills</b>	
Duration : 15 Hrs. <span style="float: right;">Marks : 06</span>	
<b>Concept of Entrepreneurship</b>	Entrepreneur - Entrepreneurship - Enterprises:-Conceptual issue Entrepreneurship vs. management, Entrepreneurial motivation. Performance & Record, Role & Function of entrepreneurs in relation to the enterprise & relation to the ecomy, Source of business ideas, Entrepreneurial opportunities, The process of setting up a business.
<b>Project Preparation</b>	Qualities of a good Entrepreneur, SWOT and Risk Analysis. Concept &

## COMPUTER NETWORKING TECHNICIAN

<b>&amp; Marketing analysis</b>	application of PLC, Sales & distribution Management. Different Between Small Scale & Large Scale Business, Market Survey, Method of marketing, Publicity and advertisement, Marketing Mix.
<b>Institutions Support</b>	Preparation of Project. Role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ n financing support agencies to familiarizes with the Policies /Programmes& procedure & the available scheme.
<b>Investment Procurement</b>	Project formation, Feasibility, Legal formalities i.e., Shop Act, Estimation & Costing, Investment procedure - Loan procurement - Banking Processes.
<b>5. Productivity</b>	
Duration : 10 Hrs. <span style="float: right;">Marks : 05</span>	
<b>Benefits</b>	Personal / Workman - Incentive, Production linked Bonus, Improvement in living standard.
<b>Affecting Factors</b>	Skills, Working Aids, Automation, Environment, Motivation - How improves or slows down.
<b>Comparison with developed countries</b>	Comparative productivity in developed countries (viz. Germany, Japan and Australia) in selected industries e.g. Manufacturing, Steel, Mining, Construction etc. Living standards of those countries, wages.
<b>Personal Finance Management</b>	Banking processes, Handling ATM, KYC registration, safe cash handling, Personal risk and Insurance.
<b>6. Occupational Safety, Health and Environment Education</b>	
Duration : 15 Hrs. <span style="float: right;">Marks : 06</span>	
<b>Safety &amp; Health</b>	Introduction to Occupational Safety and Health importance of safety and health at workplace.
<b>Occupational Hazards</b>	Basic Hazards, Chemical Hazards, Vibroacoustic Hazards, Mechanical Hazards, Electrical Hazards, Thermal Hazards. Occupational health, Occupational hygienic, Occupational Diseases/ Disorders & its prevention.
<b>Accident &amp; safety</b>	Basic principles for protective equipment. Accident Prevention techniques - control of accidents and safety measures.
<b>First Aid</b>	Care of injured & Sick at the workplaces, First-Aid & Transportation of sick person.
<b>Basic Provisions</b>	Idea of basic provision legislation of India. safety, health, welfare under legislative of India.
<b>Ecosystem</b>	Introduction to Environment. Relationship between Society and

## COMPUTER NETWORKING TECHNICIAN

	Environment, Ecosystem and Factors causing imbalance.
<b>Pollution</b>	Pollution and pollutants including liquid, gaseous, solid and hazardous waste.
<b>Energy Conservation</b>	Conservation of Energy, re-use and recycle.
<b>Global warming</b>	Global warming, climate change and Ozone layer depletion.
<b>Ground Water</b>	Hydrological cycle, ground and surface water, Conservation and Harvesting of water.
<b>Environment</b>	Right attitude towards environment, Maintenance of in-house environment.
<b>7. Labour Welfare Legislation</b>	
Duration : 05 Hrs. <span style="float: right;">Marks : 03</span>	
<b>Welfare Acts</b>	Benefits guaranteed under various acts- Factories Act, Apprenticeship Act, Employees State Insurance Act (ESI), Payment Wages Act, Employees Provident Fund Act, The Workmen's compensation Act.
<b>8. Quality Tools</b>	
Duration : 10 Hrs. <span style="float: right;">Marks : 05</span>	
<b>Quality Consciousness</b>	Meaning of quality, Quality characteristic.
<b>Quality Circles</b>	Definition, Advantage of small group activity, objectives of quality Circle, Roles and function of Quality Circles in Organization, Operation of Quality circle. Approaches to starting Quality Circles, Steps for continuation Quality Circles.
<b>Quality Management System</b>	Idea of ISO 9000 and BIS systems and its importance in maintaining qualities.
<b>House Keeping</b>	Purpose of House-keeping, Practice of good Housekeeping.
<b>Quality Tools</b>	Basic quality tools with a few examples.

### 10. DETAILS OF COMPETENCIES (ON-JOB TRAINING)

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The **competencies/ specific outcomes** on completion of On-Job Training are detailed below: -

#### Block – I

1. Safety and best practices (5S, KAIZEN etc.)
2. Record keeping and documentation
3. Identify and test the Computer devices/ components
4. Repair & Maintenance work
5. Install the Linux/Windows Operating System; configure server, adding user, Creating and managing user, effective access permission.
6. Create and manage the network shares, share permission, domain user account configuration, user account properties, domain groups, managing ports, installing and configuration of printer, scanner, disk management tools and tasks, implementing file and folders share permission, using device manager, drivers, signature verification.
7. Work and configure the various types of network devices like Ethernet cards, routers, manageable switches, HUB, gateways, firewalls, modems, connector and cables.
8. Make network cable by crimping the straight and cross CAT 5 cables and punching with IO Box, HUB/Switch and patch panel.
9. Configure a peer to peer network, data communication, connecting computers with network through cable and using Wi-Fi configuration.
10. Configure IP address (IP4/IP6) to IP routing, subnetting and supernetting the network, managing TCP/IP protocol.
11. Install & configure terminal services, managing server remotely using terminal services (remote desktop) backup restoring data installing DNS, networks installing & configuring DHCP, remote access & VPN configuring & implementing remote access server configuring.
12. Share resource and advance sharing setting, installing proxy server, installing and configuring internet connection on a PC using Broadband or Dongle.
13. Set up basic protection using public keys and MAC address filters. Integrate wired with wireless network. Power over Ethernet (PoE). Troubleshooting wired and wireless network.
14. Identify fault and Trouble shooting in different types of networks. Troubleshooting of network and its configuration and different types of cabling techniques. Working with hardware of servers and its configuration.
15. Set up the basic collaboration tool like NetMeeting for activities like chat, application sharing, remote desktop access and control, VoIP. Setup IP camera for basic surveillance scenario, logging and monitoring of devices / locations.

## **COMPUTER NETWORKING TECHNICIAN**

16. Practice on firewall technologies to secure the network perimeter, Practice LAN and Wi-Fi configuration to implement security considerations.

### **Note:**

1. Industry must ensure that above mentioned competencies are achieved by the trainees during their on job training.
2. In addition to above competencies/ outcomes industry may impart additional training relevant to the specific industry.



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**INFRASTRUCTURE FOR PROFESSIONAL SKILL & PROFESSIONAL KNOWLEDGE**

COMPUTER NETWORKING TECHNICIAN			
LIST OF TOOLS AND EQUIPMENT for Basic Training (For 20 Apprentices)			
A. TRAINEES TOOL KIT			
Sl. No.	Name of the Tool & Equipments	Specification	Quantity
1	Connecting screwdriver	100 mm	21
2	Neon tester	500 V	21
3	Screw driver set (set of 5 )		21
4	Insulated combination pliers	150 mm	21
5	Insulated side cutting pliers	150 mm	21
6	Long se pliers	150 mm	21
7	Soldering iron	25 W. 240 V.	21
8	Electrician knife		21
9	Tweezers	100mm	21
10	Digital Multimeter		21
11	Soldering Iron Changeable bits	15 W	21
12	De- soldering pump		21
B. SHOP OUTFIT TOOLS			
1.	Crimping tool (pliers)		2
2.	Soldering Iron	25W	6
3.	Magneto spanner set		2
4.	Screw driver	150mm	4
5.	Steel rule	150mm	2
6.	Scriber straight	150mm	2
7.	Soldering Iron	240W	1
8.	Allen key set (set of 9)		2
9.	Tubular box spanner (set of 6s)		1
10.	Magnifying lenses	75mm	3
11.	Continuity tester		6
12.	Soldering iron	10W	6
13.	Cold chisel	20mm	1
14.	Scissors	200mm	1
15.	Handsaw	450mm	1
C. TOOLS FOR INSTALLATION AND MAINTENANCE			
1	Server Computer		1
3	Desktop Computer		10
4	Laptop, tablet		1 each

## COMPUTER NETWORKING TECHNICIAN

5	Intel Mobile Desktop based PC with LCD monitor	1
6	Printers: Laserjet, deskjet, passbook, mfd	1 each
7	Network Printer	1
9	5KVA online UPS	2
10	LAN Cards, Wi-fi LAN Cards	6 each.
11	LCD/DLP Projector	1
12	Power Meter	2
13	Crimping Tools	6
14	Computer Toolkits	6
15	Computer Spares:	As required
16	Motherboards (of different make)	4
17	Cabinets	4
18	Processors (of different make)	4
19	Hard Disk (500 GB or better)	4
20	Optical Drives	4
21	LCD/LED Monitors	2
22	Pen Drives	4
23	External Hard disk	2
24	External DVD Writer	2
25	Keyboards	4
26	Mouse	4
27	Anti static pads	4
28	Anti static wrist wraps	4
29	SMPS	4
30	Digital Multimeters	10
31	Blu-Ray drive and player	2
32	External Hard Disk	2
34	Digital Camera	2
35	HD Display	2
36	Network storage	2
37	Card Reader	2
38	Game video card	2
39	Web Cam	2
40	Surround sound speakers	2
42	Different types of memory cards	2 each
43	Laptop kits	12
44	Laptop spares: Cabinet with display, memory, hard disk, battery pack, keyboard membrane, chargers	As required
47	SMPS Trainer kit	2
48	UPS Trainer kit	2
49	Power electronics Trainer kit	2
50	Post error debugging card	4

## COMPUTER NETWORKING TECHNICIAN

51	SMPS Tester	4
52	PCI slot Testing tool	4
<b>D. SOFTWARE</b>		
1	Windows Server Operating System	2 licenses
2	Windows Operating System	2 licenses
3	Linux Operating System	2
4	Network Management Software	1
5	MS Office	2
6	Anti virus software	2
7	Data recovery software	2
<b>E. FURNITURE and Other Equipments</b>		
1	Computer Tables	10
2	Computer Chairs	20
3	Printer Table	1
4	Class room chairs	20
5	Air conditioners (optional)	2
6	Scanner	1
7	Modem	1
8	Telephone Line	1
9	Broadband Internet connection	1
10	Fire fighting equipments	As required
11	Hardware and Network Trainer Kit	6
<b>F. HARDWARE</b>		
1.	Wireless Network Adapter	10
2.	Wireless Access Point	6
3.	Router	6
4.	Managed Layer 2 Ethernet Switch 24 port	2
5.	Managed Layer 3 Ethernet Switch 24 port	2
6.	Network Training System	2
7.	LAN Protocol Simulation and Analyser Software	2
8.	Network and Internet security trainer	2
9.	LAN cable tester	2
10.	Network cables - UTP	As required
11.	Network Cables - coaxial, flat, ribbon	As required
12.	LAN Cards, wi-fi LAN Card	5 each
13.	Connectors for cables	As required
14.	Power Meter	2
15.	Media Convertor	4 each
16.	24 port UTP jack panel	2
17.	SC Couplers	12
18.	SC Pigtails	12
19.	RJ-45 connector	As required



## COMPUTER NETWORKING TECHNICIAN

20.	Fluke Meter	2
21.	Crimping Tools	6
22.	Switch with POE ports	2
23.	POE adapters	2
24.	Network Camera (Outdoor / Indoor)	2 each
<b>G. RAW MATERIALS</b>		
1.	White Board Marker	1 Dozens
2.	Duster Cloth(2' by 2')	20 Pcs
3.	Cleaning Liquid 500 ml	2 Bottles
4.	Xerox Paper (A4)	As required
5.	Full Scape Paper (White)	1 ream
6.	PCB, solder flux etc & electronic components	As required
7.	Wires, cables Plug sockets switches of various types and other consumables	As required
8.	Resistors, Capacitors, Inductors, Diodes, LED, Transistors, Thyristors, ICs etc.	As required
9.	Spare Transformers and power devices required for servicing SMPS	As required
10.	Various types of Button Cells	As required
11.	Dry Cell	As required
12.	Hand Brush	As required
13.	Silicon grease	As required
14.	Heat sink agent	As required
15.	RAM 512 MB	As required
16.	Cartridges for printer	As required
17.	Optical Mouse P/S2 or USB	As required
18.	P/S2 OR USB Key Board	As required
19.	SMPS	As required
20.	CMOS Battery	As required
21.	3 Pin Power Chord	As required
22.	Cat 5/5e/6 cable	300 meters
23.	Flat Cable	100 meters
24.	Stapler Small	2 pcs
25.	Stapler Big	1 pcs
26.	AAA battery for remote	As required
27.	AA battery for clock	As required
28.	8 GB pen drives	4
29.	CDs	20
30.	DVDs	10
31.	Wall Clock	1 pcs
32.	Anti static pads	As required
33.	Anti static wrist wraps	As required
34.	Soldering wire and paste	As required

## COMPUTER NETWORKING TECHNICIAN

35.	RJ - 45 Connector	As required
36.	Telephone cable	As required
37.	Co-axial cable	As required
38.	RJ-11 connector	As required
39.	BNC connector, T connector, terminator	As required
40.	Keystone jack	As required
41.	Patch / Jack Panel	As required
42.	Patch / Mounting cord	As required
43.	RJ-45 Info outlet with faceplate	As required
44.	RJ-45 I/O Box	As required
45.	RJ - 45 Cable extender	As required
46.	8-port HUB	4
47.	LAN Card	4
48.	Wi-fi LAN Card both PCI and USB	2 each



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## COMPUTER NETWORKING TECHNICIAN

### INFRASTRUCTURE FOR WORKSHOP CALCULATION & SCIENCE AND ENGINEERING DRAWING

TRADE: COMPUTER NETWORKING TECHNICIAN

#### LIST OF TOOLS& EQUIPMENTS FOR -20APPRENTICES

1) Space rms : 45 Sq. m.(For Engineering Drawing)

2) Infrastructure:

<b>A : TRAINEES TOOL KIT:-</b>			
Sl.No.	Name of the items	Specification	Quantity
1.	Draughtsman drawing instrument box		20+1 set
2.	Set square celluloid 45° (250 X 1.5 mm)		20+1 set
3.	Set square celluloid 30°-60° (250 X 1.5 mm)		20+1 set
4.	Mini drafter		20+1 set
5.	Drawing board (700mm x500 mm) IS: 1444		20+1 set
<b>B : Furniture Required</b>			
Sl. No.	Name of the items	Specification	Quantity
1	Drawing Board		20
2	Models : Solid & cut section		As required
3	Drawing Table for trainees		As required
4	Stool for trainees		As required
5	Cupboard (big)		1
6	White Board (size: 8ft. x 4ft.)		1
7	Trainer's Table		1
8	Trainer's Chair		1

## COMPUTER NETWORKING TECHNICIAN

TOOLS & EQUIPMENTS FOR EMPLOYABILITY SKILLS		
Sl. No.	Name of the Equipment	Quantity
1.	Computer (PC) with latest configurations and Internet connection with standard operating system and standard word processor and worksheet software	10
2.	UPS - 500VA	10
3.	Scanner cum Printer	1
4.	Computer Tables	10
5.	Computer Chairs	20
6.	LCD Projector	1
7.	White Board 1200mm x 900mm	1

*Note: - Above Tools & Equipments t required, if Computer LAB is available in the institute.*



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## FORMAT FOR INTERNAL ASSESSMENT

Name & Address of the Assessor :						Year of Enrollment :								
Name & Address of ITI (Govt./Pvt.) :						Date of Assessment :								
Name & Address of the Industry :						Assessment location: Industry / ITI								
Trade Name :			Semester:			Duration of the Trade/course:								
Learning Outcome:														
Sl. No.	Maximum Marks (Total 100 Marks)		15	5	10	5	10	10	5	10	15	15	Total internal assessment Marks	Result (Y/N)
	Candidate Name	Father's/Mother's Name	Safety consciousness	Workplace hygiene	Attendance/ Punctuality	Ability to follow Manuals/ Written instructions	Application of Knowledge	Skills to handle tools & equipment	Economical use of materials	Speed in doing work	Quality in workmanship	VIVA		
1														
2														