

<b>NSDA Code</b> <b>2020/ITES/DGT/03705</b>
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**CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE**

Directorate General of Training (DGT)  
Government of India, Ministry of Skill Development and Entrepreneurship,  
1st and 2nd Floor, CIRTES Building  
Next to Pusa ITI, Pusa Campus  
New Delhi - 110012

**Name and address of submitting body:**

Directorate General of Training (DGT)  
Government of India, Ministry of Skill Development and Entrepreneurship,  
1st and 2nd Floor, CIRTES Building  
Next to Pusa ITI, Pusa Campus  
New Delhi - 110012

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

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**List of documents submitted in support of the Qualifications File**

1. Competency-based curriculum with following details:

Model Curriculum to be added which will include the following:

1. Indicative list of tools/equipment to conduct the training: Enclosed with curriculum
2. Trainers qualification: Indicated in the curriculum
3. Lesson Plan: All DGT curricula are designed indicating specific practical to be carried out during training along with details of trade theory. Based on this the

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concerned instructor prepares the Lesson Plan and demonstration plan with support of IMPs developed by NIMI,DGT.

4. Distribution of training duration into theory/practical/OJT component: Indicated in the curriculum.
2. Curriculum for Core Skills (Employability Skills).

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- SUMMARY**

<b>1</b>	<b>Qualification Title</b>	<b>'COMPUTER HARDWARE &amp; NETWORK MAINTENANCE'</b>
<b>2</b>	<b>Qualification Code, if any</b>	<b>DGT/1050</b>
<b>3</b>	<b>NCO code and occupation</b>	2523.0200 - Computer System Hardware Analyst/Hardware Engineer 2523.0100-Data Communication Analyst/ Network Administrator
<b>4</b>	<b>Nature and purpose of the qualification (Please specify whether qualification is short term or long term)</b>	Prepare skilled technician who is able to support the organization's computing and telecommunication network operations and procedures in business, residential premises etc. (long term qualification)
<b>5</b>	<b>Body/bodies which will award the qualification</b>	Directorate General of Training (DGT).
<b>6</b>	<b>Body which will accredit providers to offer courses leading to the qualification</b>	Directorate General of Training (DGT) accredits the Training providers (ITIs/ NSTIs/MSTIs/BTCs/BTPs / Industries / Establishments).
<b>7</b>	<b>Whether accreditation/affiliation norms are already in place or not , if applicable (if yes, attach a copy)</b>	Yes. The accreditation/ affiliation norms and any amendments made from time to time are available on DGT web portal.
<b>8</b>	<b>Occupation(s) to which the qualification gives access</b>	<ul style="list-style-type: none"> <li>2523.0200 - Computer System Hardware Analyst/ Hardware Engineer</li> <li>2523.0100- Data Communication Analyst/ Network Administrator</li> </ul>
<b>9</b>	<b>Job description of the occupation</b>	The Trainee in this job is responsible for supporting the organization's computing and telecommunication network operations and procedures. He looks after computer peripheral equipment, networks, communications equipment providing support for users' software and hardware needs. Tests, evaluates and recommends data communications hardware and software.
<b>10</b>	<b>Licensing requirements</b>	NOT REQUIRED
<b>11</b>	<b>Statutory and Regulatory requirement of the relevant</b>	NOT AVAILABLE

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	<b>sector (documentary evidence to be provided)</b>			
12	<b>Level of the qualification in the NSQF</b>	Level 4		
13	<b>Anticipated volume of training/learning required to complete the qualification</b>	<b>Sl. No.</b>	<b>Course Element</b>	<b>Notional Training Hours</b>
		1	Professional Skill (Trade Practical)	1200
		2	Professional Knowledge (Trade Theory)	240
		3	Employability Skills	160
			<b>Total</b>	<b>1600</b>
14	<b>Indicative list of training tools required to deliver this qualification</b>	As per Annexure I of curriculum		
15	<b>Entry requirements and/or recommendations and minimum age</b>	Passed 10 <sup>th</sup> Class examination with Science and Mathematics or its equivalent Minimum age 14years as on first day of academic session		
16	<b>Progression from the qualification (Please show Professional and academic progression)</b>	An Individual can proceed for:		
		Professional <ul style="list-style-type: none"> <li>• Technician</li> <li>• Senior Technician</li> <li>• Supervisor</li> <li>• Manager</li> <li>• Entrepreneur</li> </ul>	Technical / Academic  	
17	<b>Arrangements for the Recognition of Prior learning (RPL)</b>	Yes (For more details refer "Guidelines for Private candidate" in DGT website MIS portal).		
18	<b>International comparability where known (research evidence to be provided)</b>	-----		
19	<b>Date of planned review of the qualification.</b>	5 Yrs from the Date of Approval		

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<b>20</b>	<b>Formal structure of the qualification</b>			
	<b>Mandatory components</b>			
	<b>Title of component and identification code/NOSs/Learning outcomes</b>	<b>Estimated size (learning hours)</b>		<b>Level</b>
		<b>SKILL</b>	<b>KNOWLEDGE</b>	
<b>TRADE SPECIFIC</b>				
(i)	Perform all the functions with Electrical and Electronic Components related to Computer and Networking system drawing following safety precautions.	210	42	3
(ii)	Assemble and repair Desktop Computer with all its hardware components.	90	18	3
(iii)	Install different Operating System and all other application software.	180	36	4
(iv)	Customize Operating System and maintenance of system application software.	90	18	4
(v)	Assemble and repair Laptop and its hardware components.	60	12	4
(vi)	Perform the operations of office package (word, excel, power point).	30	6	4
(vii)	Install Printer, Scanner and troubleshoot their faults.	90	18	4
(viii)	Set up and configure Networking System using various network devices.	210	42	4
(ix)	Share and control resource and Internet connection through network.	90	18	4
(x)	Implement Network Security to protect from various attacks on networking.	60	12	4

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(xi)	Install and configure Windows and Linux server.	60	12	4
(xii)	Browse internet and communicate through email.	30	6	4
<b>CORE SKILLS</b>				
<b>EMPLOYABILITY SKILLS</b>				
(i)	Apply safe working practices.	-	20	4
(ii)	Comply with environment regulation and housekeeping.	-	20	4
(iii)	Interpret & use formal and technical communication.	-	20	4
(iv)	Apply the concept in productivity & quality management in day to day work to improve productivity & quality.	-	20	4
(v)	List and interpret various acts of labour welfare legislation.	-	20	4
(vi)	Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.	-	20	4
(vii)	Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.	-	20	4
(viii)	Utilize basic computer applications and internet to take benefit of IT developments in the industry.	-	20	4
<b>Total</b>			<b>1600</b>	-

**SECTION 1****ASSESSMENT**

21	<b>Body/Bodies which will carry out assessment:</b> Controller of Examinations, DGT
22	<b>How will RPL assessment be managed and who will carry it out?</b> DGT will carry out the RPL assessment following the below mentioned eligibility criteria for Trainee: Applicants aspiring to appear as Private Candidates in the AITT under CTS for award of NTC, have been categorized based on their educational background and experience. Subsequently 'Private Candidates' may be admitted under one of the following categories. Category wise 'eligibility criteria' for appearing as 'Private Candidate' in AITT under CTS has been listed below: Category I: Ex-trainees (successful pass-outs) of ITI A. Ex-trainees of ITI who already possess NTC in one of the trades under CTS, are eligible for applying as Private candidate for an allied trade, provided he/ she fulfils all the conditions regarding educational qualification etc. prescribed for that allied trade. B. In addition, the applicant should possess minimum of 1 year experience (as on date of submission of application) post the date of AITT result declaration in the desired allied trade in establishments implementing Apprenticeship Training Scheme (ATS)/ establishments registered under the Apprenticeship portal or registered MSMEs or Entities registered with any government/local authorities / shops covered under Factories Act 1948 and Shops and Establishments Act applicable for the concerned State. Category II: 'Ex-trainees (successful pass-outs) and current trainees under CoE scheme A. The applicant should have the minimum prescribed entry qualification and should fulfil eligibility criteria for the desired trade under CTS, in which he/she intends to appear for AITT as Private Candidate. Mapping of CoE trades, with that of regular CTS trades is provided in Annexure IV. CoE candidates must register as 'Private Candidate' under CTS in the relevant/mapped CTS trade only. B. There should be a minimum gap of 1 year between successful completions of CoE training i.e. from the date of result declaration to the date of submission of application for 'Private Candidate' certification. C. During this gap of 1 year, the candidate must have undergone Industry training or gained experience in desired trade in establishments implementing Apprenticeship Training Scheme (ATS)/ establishments registered under the Apprenticeship portal or registered MSMEs or Entities

	<p>registered with any government/local authorities / shops covered under Factories Act 1948 and Shops and Establishments Act applicable for the concerned State.</p> <p>Category III: SCVT Candidates (admitted till August 2018 session)</p> <p>A. No special provisions have been made for SCVT Trainees to enrol as 'Private Candidate'. Going forward, SCVT trainees have been granted equivalence vide G.S.R 186(E) dated 2nd March 2017 for undergoing apprenticeship training under the Apprentices Act 1961 to obtain 'NAC' (Refer Annexure V).</p> <p>B. Only for SCVT trainees admitted till August 2018 batch, provision has been made for obtaining NTC by appearing in AITT under 'Private Candidate'. Such trainees will continue to be governed by old guidelines for 'Private Candidate'.</p> <p>Category IV: Other Candidates (candidate not falling in any of the above 3 categories, including SCVT trainees enrolled from admission session 2019 onwards)</p> <p>A. The applicant should have the minimum prescribed entry qualification and should fulfil eligibility criteria for the relevant trade under CTS, in which he/she desires to appear for AITT as Private Candidate.</p> <p>B. Applicant should be minimum 21 years of age on the date of submission of application. There is no upper age limit.</p> <p>C. The applicant should possess minimum of 3 years' experience (on the date of submission of application) in the relevant trade in establishments implementing Apprenticeship Training Scheme (ATS)/ establishments registered under the Apprenticeship portal or registered MSMEs or Entities registered with any government/local authorities / shops covered under Factories Act 1948 and Shops and Establishments Act applicable for the concerned State. (For detail and updated information please refer to DGT web portal.)</p>
23	<p><b>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.</b></p> <p><b>(1) Assessment process:</b></p> <p>The assessment for the qualification is carried out by conducting formative assessments, and end of year examinations (Summative). The formative assessments in respect of each Learning Outcome for practical and related theory are conducted by the concerned instructors for evaluating the knowledge and skill acquired by trainees and the behavioural transformation of the trainees. This formative assessment is primarily</p>



carried out by collecting evidence of competence gained by the trainees by evaluating them at work based on assessment criteria, asking questions and initiating formative discussions to assess understanding and by evaluating records and reports. Summative assessment is carried out by All India Trade Test on Trade Theory, Trade practical and Employability Skills. The question papers for the theory Examinations contain objective type questions.

The marking pattern and distribution of marks for the qualification are as under:

Marking Pattern			
Sl. No.	Type of assessment	Subject for the trade test	Marks
1	Summative Assessment	Practical	250
2		Trade Theory	100
3		Employability Skills	50
4	Formative assessment based on Learning Outcomes		200
TOTAL:			600

**(2) Minimum pass marks:**

The minimum pass percent for Trade Practical and Formative assessment is 60% & for all other subjects is 33%. There will be no Grace marks.

**Testing and certifications for the course:**

Controller of examinations, DGT carries out the assessment and issues National Trade Certificate (NTC) following the norms and guidelines issued by the Directorate from time to time.

**Overall assessment strategy:**

Assessment of the qualification evaluates trainees to show that they can integrate knowledge, skills and values for carrying out relevant tasks as per the defined learning outcomes and assessment criteria. The trainees may choose the preferred language for assessment. The underlying principle of

assessment is fairness and transparency. While assessing the trainee, assessor is directed to assess as per the defined assessment criteria against the learning outcomes. The evidence of the competence acquired by the trainees can be obtained by conducting theory and practical examinations, observing the trainees at work, asking questions and initiating discussions to assess, understand and evaluate records and reports. The ultimate objective of the assessment is to assess the candidates as per the defined assessment criteria for the learning outcomes.

**Specific Arrangements for assessment:**

- Assessment is outcome-based.
- There are formative and summative assessments in Theory and Practical.
- Assessment is carried out in Trade theory, Trade Practical and Employability Skills.
- While Trade Theory and Trade Practical are used for assessing Trade-related jobs and Employability skills is used to test the communication, professional language, leadership, entrepreneurship and team-work abilities of the trainee.
- In addition to demonstration of theory and practical knowledge, trainees get a chance to present total personality.

**Quality assurance activities:**

Question papers are set by external paper setters/ software generated. Evaluation of Theory Examinations in Trade and Employability Skill is done by third-party agency. Trade Practical is examined by External Examiner.

**24. Assessment evidences**

**Title of Component: Formative Assessment Breakup**

( on half yearly average of the learning assessment covered)

**Means of assessment**

Assessment will be evidence based comprising the following for each Learning Outcome:

<b>Serial No.</b>	<b>Terminal Competency</b>	<b>Maximum Weightage (%)</b>
1	Safety consciousness	15
2	Workplace hygiene	5
3	Attendance/ Punctuality	10
4	Ability to follow Manuals/ Written instructions	5
5	Application of Knowledge	10

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6	Skills to handle tools / equipment/ Instruments/ Devices	10
7	Economical use of materials	5
8	Working Strategy	10
9	Quality in workmanship/ Performance	15
10	VIVA	15
	Total Maximum Weightage (%)	100

**Pass/Fail**

The minimum pass percentage is 60% marks for formative assessment.

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**ASSESSMENT CRITERIA**

<b>LEARNING OUTCOME (TRADE SPECIFIC)</b>	
<b>LEARNING OUTCOME</b>	<b>ASSESSMENT CRITERIA</b>
1. Perform all the functions with Electrical and Electronic Components related to Computer and Networking system following safety precautions.	Construct a simple circuit using AC/DC supply, lamp, fuse and switch.
	Measure circuit voltage and current using voltmeters and ammeters. Also check voltage between earth and neutral.
	Measure resistance using Multimeter.
	Practice of soldering and de soldering techniques, practice using hook-up wires. Soldering resistors on Tag board. Practice using surface mount board/ device.
	Measure inductance using LCR meter. Calculate Inductive reactance at different input signal frequencies.
	Rewind a transformer to given specification using winging machine.
	Test working condition of capacitor. Discharge first then test a charged capacitor. Measure capacitance using RLC meter.
	Construct and test a half wave and full wave diode rectifiers.
	Practice Quick test given transistors using Multimeter. Identify opens, shorted junctions.
	Assemble and test a fixed voltage regulator using 3pin IC.
	Assemble a simple inverter and converter for use with emergency lamp.
Construct small circuit using digital electronic components.	
2. Assemble and repair of Desktop Computer with all its hardware components.	Open the cabinet and identify various motherboards components, connectors, slots, ports (USB, VGA, DVI, and HDMI), cables and Connectors.
	Identify Motherboard Components and connections. CPU (Processor) RAM (Memory) Hard Drive Connections Mechanical vs. Solid State Drives ROM Drives Graphic Cards, Sound Cards.
	Use Post Error Debug Card and understand error Code for

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	<p>fault troubleshooting.</p>
	<p>Verify components with the configuration of CMOS BIOS set up.</p>
	<p>Check DDR3 and DDR4 RAM's FSB. Insert it on memory slot. Test and understand various beep sounds in case of trouble.</p>
	<p>Removing the Processor, Installing the Processor. Understand and identify various different processor sockets.</p>
3. Install different Operating System and all other application software.	<p>Boot the PC through a BOOTABLE DVD of OS. Partition the disk, Format the drive. Install Windows 7 and Windows 10 from DVD Disk.</p>
	<p>Make Win-7 AND Win-10 dual boot properly. Practice on recovery partition</p>
	<p>Install and boot Win-10 in UEFI mode.</p>
	<p>Collecting and installing specific/compatible Device driver from internet. Update the driver software from internet. Uninstall and Rollback the driver.</p>
	<p>Go to Windows Update in control panel. Check installed update. Change/ update Setting.</p>
	<p>Install any popular antivirus software. Online and offline updating of antivirus. View its various options. On and off Firewall option inside antivirus software.</p>
	<p>Install various application software programs in windows. Install Firefox and chrome browser.</p>
	<p>Install Linux (Ubuntu, Fedora, Debian, Red hat) OS from bootable usb drive and partition the hard disk manually. Use diskpart command.</p>
	<p>Practice important Linux commands.</p>
4. Customize Operating System and maintenance of system application software.	<p>Open Personalize Setting and find Desktop icon setting, Screen Resolution and various other setting.</p>
	<p>Open windows explorer and find different drives, files and folders, their size and other properties. Do it through command prompt also.</p>

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	<p>Create and configure user accounts in Windows 7/8/10. Create Administrator and Limited user account.</p> <p>Make Changes to an Account. Reset Limited user account password through Administrative account.</p> <p>Use various free and paid Disk clean up utility to remove junk files from hard disk.</p> <p>Create automated backups to ensure you always have a recent backup.</p> <p>Configure outlook and connect with Gmail, use thunderbird IMAP/POP3 along with security features. Configuration of Browsers.</p>
5. Assemble and repair Laptop and its hardware components.	<p>Assemble and disassembling a Laptop.</p> <p>Upgrade RAM, HDD and other parts.</p> <p>Test fault finding and troubleshooting techniques.</p> <p>Enabling support for SATA technology. Installation of OS using SATA technology drivers.</p> <p>Configuration of camera, mic, WLAN and Bluetooth, touchpad, finger print scanner.</p>
6. Perform the operations of office package (word, excel, power point).	<p>Format text and editing. Set up page and margins. Tabs and indents.</p> <p>Create Worksheets using Spreadsheet Software.</p> <p>Create Slide shows, insert picture, theme, format text, animation and object.</p>
7. Install Printer, Scanner and troubleshoot their faults.	<p>Installing a printer and carrying self-test.</p> <p>Tracing the control board and identifying defective components. Servicing of control board.</p> <p>Replacement of toner cartridge of laser printers.</p> <p>Installing plotter and rectify its common faults.</p> <p>Install a Scanner, configure it and use Automatic Document Feeder (ADF), OCR.</p>

	Find and locate various Scanner related problems and troubleshoot them.
	Install Barcode and configure it.
	Install Passbook Printer calibrate, configure.
8. Set up and configure Networking System using various network devices.	Identify various Network device like: (a) Switch (Normal and Managed), (b) Router (Normal and wireless), (c) Rack, Patch Panel, i/o box, (d) Access Point etc.
	Practice crimping with straight and cross CAT 6 cables.
	Punching practice in IO Box and patch panel.
	Create cabling using Fibre Optic cable and connectors.
	Install & Configure a Peer- to-Peer Network using Windows and Linux Software.
	Connect computers with Network with Drop cable and using Wi Fi configuration.
	Configure Layer 3 Switch. Verify IP Routing Process. Configure it from CLI in layer three switch.
	Create simple VLAN and understand the concepts.
	Practice IP Addressing technique (IPv4/IPv6) and Subnetting and Supernetting the network.
Practice to set up and use SMTP, TELNET, FTP, HTTP, SNMP, LDAP, SSH, NTP, IPP, HTTPS etc.	
9. Share and control resource and Internet connection through network.	Configure internet connection to the PC using wireless technology and troubleshoot various connection related problems.
	Share the internet connection (wire and wireless) in the local network and access it from other machine in LAN.
	Configure internet connection using L2 and L3 switch.
	Install Proxy Server and configure it.
	Setup of basic collaboration tool for activities like chat, application sharing, remote desktop access and control,

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	VoIP.
10. Implement Network Security to protect from various attacks on networking.	<p>Set up basic protection using public keys and MAC address filters.</p> <p>Troubleshoot wired and wireless network.</p> <p>Practice on firewall technologies to secure the network perimeter.</p> <p>Practice LAN security considerations and implement endpoint and Layer 2 security features.</p>
11. Install and configure Windows and Linux server.	<p>Configure services like Active Directory, DNS and DHCP.</p> <p>Configure IIS Web server (latest version).</p> <p>Configure following on Linux Server: (a) /etc/hosts file, (b) DHCP, (c) DNS, (d) WEB SERVER, (e) NFS and SAMBA.</p>
12. Browse internet and communicate through email.	<p>Practice web browsing using popular web browsing software, Configuring web browser.</p> <p>Use favourite folder for browsing quickly.</p> <p>Using e-mail: Opening and configuring email client, mailbox: inbox and outbox, Creating and sending e-mail, Replying to an e-mail message, Forwarding and e-mail message, Sorting and searching emails. Sending document/softcopy by email, activating spell checking, using address book, Handling SPAM, Removal of Cookies.</p>

LEARNING OUTCOME(CORE SKILL)	
LEARNING OUTCOME	ASSESSMENT CRITERIA
<b>EMPLOYABILITY SKILLS</b>	
1. Apply safe working practices	<p>Follow and maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements and according to site policy.</p> <p>Recognize and report all unsafe situations according to site policy.</p> <p>Identify and take necessary precautions on fire and safety</p>



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	hazards and report according to site policy and procedures.
	Identify, handle and store / dispose off dangerous goods and substances according to site policy and procedures following safety regulations and requirements.
	Identify and observe site policies and procedures in regard to illness or accident.
	Identify safety alarms accurately.
	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.
	Identify and observe site evacuation procedures according to site policy.
	Identify Personal Protective Equipment (PPE) and use the same as per related working environment.
	Identify basic first aid and use them under different circumstances.
	Identify different fire extinguisher and use the same as per requirement.
2. Comply with environment regulation and housekeeping	Identify environmental pollution & contribute to the avoidance of instances of environmental pollution.
	Deploy environmental protection legislation & regulations
	Take opportunities to use energy and materials in an environmentally friendly manner.
	Avoid waste and dispose waste as per procedure
	Recognize different components of 5S and apply the same in the working environment.
3. Interpret & use formal and technical communication.	Obtain sources of information and recognize information.
	Use and draw up technical drawings and documents.
	Use documents and technical regulations and occupationally related provisions.
	Conduct appropriate and target oriented discussions with higher authority and within the team.
	Present facts and circumstances, possible solutions & use English special terminology.
	Resolve disputes within the team.
	Conduct written communication.
4. Apply the concept in productivity & quality management in day to day work to improve	Explain the concept of productivity and apply during execution of job.
	Explain the concept of quality tools and apply during

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productivity & quality.	execution of job.
5. List and interpret various acts of labour welfare legislation.	<p>Explain basic concept of labour welfare legislation, adhere to responsibilities and remain sensitive towards such laws.</p> <p>Knows benefits guaranteed under various acts.</p>
6. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.	<p>Explain the concept of energy conservation, global warming, pollution and utilize the available resources optimally &amp; remain sensitive to avoid environment pollution.</p> <p>Explain standard procedure for disposal of waste.</p>
7. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.	<p>Explain personnel finance and entrepreneurship.</p> <p>Explain role of various schemes and institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non-financing support agencies to familiarize with the policies/ programmes, procedure &amp; the available scheme.</p> <p>Prepare a report to become an entrepreneur for submission to financial institutions.</p>
8. Utilize basic computer applications and internet to take benefit of IT developments in the industry.	<p>Explain the basic hardware of personal computer.</p> <p>Use common application software viz., word, excel, power point etc., in day to day work.</p> <p>Awareness about useful internet websites, search relevant information pertaining to the assigned tasks.</p>

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Title/Name of qualification/component: Computer Hardware and Network Maintenance		Level: 4	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
Process	<p><b>Familiar, Predictable, Routine Situations of Clear Choice</b></p> <ul style="list-style-type: none"> <li>Perform all the functions with Electrical and Electronic Components related to Computer and Networking system drawing following safety precautions.</li> <li>Assemble and repair Desktop Computer with all its hardware components.</li> <li>Install different Operating System and all other application software.</li> <li>Customize Operating System and maintenance of system application software.</li> </ul>	<p>As per the learning outcomes 'Perform all the functions with Electrical and Electronic Components related to Computer and Networking system drawing following safety precautions' and 'Customize Operating System and maintenance of system application software' the learner will be required to choose appropriate tools, formats, templates, shortcut keys as per the requirement of the job. The work will however be done within a familiar, predictable and routine range of situations as mentioned in the assessment criteria.</p> <p>Hence NSQF Level is 4 for this descriptor.</p>	4
Professional knowledge	<p><b>Factual knowledge in a field of work or study</b></p> <ul style="list-style-type: none"> <li>Colour coding of resistors. calculating,</li> </ul>	<p>The learner will need to be well versed with detailed knowledge in the field of computer and various applications for hardware and networking for examples 'Colour coding of resistors.</p>	4

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Title/Name of qualification/component: <b>Computer Hardware and Network Maintenance</b>		Level: <b>4</b>	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
	<p>measuring resistance value and its tolerance value. Wattage of resistors, specific resistance and their importance.</p> <ul style="list-style-type: none"> <li>• Functions of an operating system. Disk operating system.</li> <li>• Network Topologies – Star, Ring, Bus, Tree, Mesh, Hybrid.</li> <li>• Protocols, TCP/IP, FTP, Telnet etc.</li> <li>• Working principle of Proxy Server. Objective of using it. Features of Proxy Server.</li> <li>• Techniques &amp; strategies to prevent various attacks on networking.</li> </ul>	<p>calculating, measuring resistance value and its tolerance value. Wattage of resistors, specific resistance and their importance.</p> <p>‘Network Topologies – Star, Ring, Bus, Tree, Mesh, Hybrid’ etc will give the learner factual knowledge about computer networking and hardware.</p> <p>Hence NSQF Level is 4 for this descriptor.</p>	
Professional skill	<ul style="list-style-type: none"> <li>• Assemble and repair Laptop and its hardware components.</li> <li>• Perform the operations of office package (word, excel, power point).</li> <li>• Install Printer, Scanner and troubleshoot their faults.</li> <li>• Set up and configure Networking System using various network devices.</li> </ul>	<p>The learner after the training will be able to work independently and recall and demonstrate practical skill, routine and repetitive in narrow range of application, using appropriate rule and tool as per the job given to them. This can be ascertained as per the learning outcomes ‘Install Printer, Scanner and troubleshoot their faults’ and ‘Set up and configure Networking System using various network devices’.</p> <p>The learner will also be responsible for own quality of work and will have to use quality tools</p>	4

**NSQF QUALIFICATION FILE**

Approved in 24<sup>th</sup> NSQC, dated: 27<sup>th</sup> Feb, 2020

*Computer Hardware & Network Maintenance*

Title/Name of qualification/component: <b>Computer Hardware and Network Maintenance</b>		Level: <b>4</b>	
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relates to the NSQF level descriptors	NSQF Level
		to check own work to ensure conformance to requirements of the job.  Hence NSQF Level is 4 for this descriptor.	
Core skill	<p><b>Basic Mathematical and Algebraic principles</b></p> <ul style="list-style-type: none"> <li>Apply the concept in productivity &amp; quality management in day to day work to improve productivity &amp; quality.</li> </ul> <p><b>Basic understanding of social political and natural environment</b></p> <ul style="list-style-type: none"> <li>Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.</li> <li>Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal &amp; societal growth.</li> </ul> <p><b>Language to communicate written or oral, with required clarity</b></p> <ul style="list-style-type: none"> <li>Interpret &amp; use formal and technical communication.</li> </ul>	<p>The learner applies basic mathematical and algebraic principles for doing his/her day to day work to improve productivity &amp; quality. The learner is able to communicate orally &amp; in written using simple English language and has strong listening skills. Works as a team player and able to explain technical terms with required clarity. The learner performs the job complying environment regulation and housekeeping by applying safe working practices. Maintains energy conservation, prevents global warming &amp; pollution by optimally using available resources in day to day work.</p> <p>Hence NSQF Level is 4 for this descriptor.</p>	4

**NSQF QUALIFICATION FILE**Approved in 24<sup>th</sup> NSQC, dated: 27<sup>th</sup> Feb, 2020*Computer Hardware & Network Maintenance*

Title/Name of qualification/component: <b>Computer Hardware and Network Maintenance</b>		Level: <b>4</b>	
<b>NSQF Domain</b>	<b>Outcomes of the Qualification/Component</b>	<b>How the outcomes relates to the NSQF level descriptors</b>	<b>NSQF Level</b>
	<ul style="list-style-type: none"> <li>List and interpret various acts of labour welfare legislation.</li> </ul>		
Responsibility	<ul style="list-style-type: none"> <li>Share and control resource and Internet connection through network.</li> <li>Implement Network Security to protect from various attacks on networking.</li> <li>Install and configuration of Windows and Linux server.</li> <li>Browse internet and able to communicate through email.</li> </ul>	<p>The Computer Hardware and Network Maintenance technician has to perform all the learning outcomes independently and as per requirements of the job, hence is responsible for own work and learning. As per the learning outcome 'Implement Network Security to protect from various attacks on networking' the learner is responsible to do his work independently.</p> <p>Hence NSQF Level is 4 for this descriptor</p>	4

**SECTION 3**

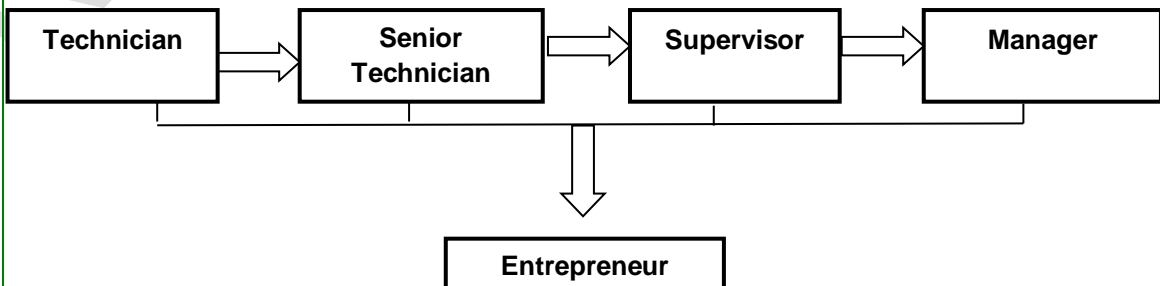
**EVIDENCE OF NEED**

26	<p><b>What evidence is there that the qualification is needed? What is the estimated uptake of this qualification and what is the basis of this estimate?</b></p> <table border="1" data-bbox="336 510 1492 1671"> <thead> <tr> <th data-bbox="336 510 719 651"><b>Basis</b></th> <th data-bbox="719 510 1492 651"><b>In case of other Awarding Bodies (Institutes under Central Ministries and states departments)</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="336 651 719 1032">Need of the qualification</td> <td data-bbox="719 651 1492 1032"> <p><b>IT and ITES</b> Sector has a significant presence of organized as well as unorganized skilled manpower requirement. This sector is poised to grow exponentially in the years to come and is highly labour intensive and there are many emerging trends in this sector.</p> <p>Hence the qualification has been designed keeping in view to cater to the ever-increasing demand of skilled manpower in consultation with stakeholders.</p> </td> </tr> <tr> <td data-bbox="336 1032 719 1458">Industry Relevance</td> <td data-bbox="719 1032 1492 1458"> <p>The job role defined for the qualification is as per the National Classification of Occupations 2015 which is developed by Employment Directorate under the ministry of Labour and Employment in collaboration with different industry partners and as per ILO guidelines. Moreover, the training is imparted in ITIs/NSTIs/MSTIs/ BTC/ BTPs/ Industries / Establishments etc. where such requirement is available. This justifies the qualification is very much relevant for industry.</p> </td> </tr> <tr> <td data-bbox="336 1458 719 1585">Usage of the qualification</td> <td data-bbox="719 1458 1492 1585"> <p>The Proposed qualification will create skilled Technician for various establishments in different Sectors.</p> </td> </tr> <tr> <td data-bbox="336 1585 719 1671">Estimated uptake</td> <td data-bbox="719 1585 1492 1671"> <p>The present seating capacity is approximately 1846.</p> </td> </tr> </tbody> </table>	<b>Basis</b>	<b>In case of other Awarding Bodies (Institutes under Central Ministries and states departments)</b>	Need of the qualification	<p><b>IT and ITES</b> Sector has a significant presence of organized as well as unorganized skilled manpower requirement. This sector is poised to grow exponentially in the years to come and is highly labour intensive and there are many emerging trends in this sector.</p> <p>Hence the qualification has been designed keeping in view to cater to the ever-increasing demand of skilled manpower in consultation with stakeholders.</p>	Industry Relevance	<p>The job role defined for the qualification is as per the National Classification of Occupations 2015 which is developed by Employment Directorate under the ministry of Labour and Employment in collaboration with different industry partners and as per ILO guidelines. Moreover, the training is imparted in ITIs/NSTIs/MSTIs/ BTC/ BTPs/ Industries / Establishments etc. where such requirement is available. This justifies the qualification is very much relevant for industry.</p>	Usage of the qualification	<p>The Proposed qualification will create skilled Technician for various establishments in different Sectors.</p>	Estimated uptake	<p>The present seating capacity is approximately 1846.</p>
<b>Basis</b>	<b>In case of other Awarding Bodies (Institutes under Central Ministries and states departments)</b>										
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Usage of the qualification	<p>The Proposed qualification will create skilled Technician for various establishments in different Sectors.</p>										
Estimated uptake	<p>The present seating capacity is approximately 1846.</p>										
27	<p><b>Recommendation from the concerned Line Ministry of the Government/Regulatory Body. To be supported by documentary evidences.</b></p> <p>The qualification, originally designed for Craftsman Training Scheme is in existence for many years and approved by DGT (Regulatory Body) under Ministry of Skill Development and Entrepreneurship, Govt. of India.</p>										

28	<p><b>What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF? Give justification for presenting a duplicate qualification</b></p> <p>The qualification is originally designed and approved by DGT for the Craftsman Training Scheme and is in existence for many years. No such duplicate qualification of same duration and competencies exists.</p>
29	<p><b>What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated? Specify the review process here</b></p> <ul style="list-style-type: none"> <li>• The research wing of CSTARI &amp; DGT reviews and updates the qualification, in consultation with industries and other stakeholders, on a regular basis by conducting trade committee meetings.</li> <li>• DGT will monitor any duplicity by comparing existing qualifications with upcoming ones in the National Qualifications Register (NQR) and relevant sectors.</li> </ul>

**SECTION 4**

**EVIDENCE OF PROGRESSION**

30	<p><b>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? Show the career map here to reflect the clear progression</b></p> <p>On completion of the training the trainee will have an opportunity to move in vertical/horizontal pathways to promote to higher designations. The learner can further undergo other specialised courses to excel in the relevant field.</p>  <pre> graph LR     A[Technician] --&gt; B[Senior Technician]     B --&gt; C[Supervisor]     C --&gt; D[Manager]     B --&gt; E[Entrepreneur]     </pre>
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