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#### **NSDA Reference**

To be added by NSDA

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

#### Name and address of submitting body:

Directorate General of Training (DGT), Ministry of Skill Development & Entrepreneurship (MoSDE) Shram Shakti Bhawan, Rafi Marg, New Delhi

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

Name: Sh. Dinesh Nijhawan

Position in the organisation: Director (CFI)

Address if different from above Tel number(s) 011-23708071

E-mail address: dinesh\_nij@hotmail.com

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

- 1. Qualification document- Computer Network Assistant
- 2. Curriculum for Computer Network Assistant under Information and Communication Technology Sector for Modular Employable Scheme (MES)
- 3. Executive Summary of Human Resource and Skill Requirements in IT & ITes by NSDC
- 4. List of number of trainees of trained under MES in 2015-16 & 2016-17.
- 5. List of candidates' placed for this course in 2016.

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#### **SUMMARY**

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comparability where known  Date of planned review of the qualification.	2 years after approval of the Qualification			
Title of component and identification code.  Mandatory/ Optional  Estimated size (learning hours)			Level	
(i) DGT/MES/ICT/N24: A Computer Networking	1	M	100	3
(ii) DGT/MES/ICT/N25: Configuring Network	Obtain Skills of installing &	M	300	3
(iii) DGT/MES/ICT/N26: H Network security	Have knowledge of	M	100	3
	Total		500	

Please attach any document giving further detail about the structure of the qualification – eg a Curriculum Document or a Qualification Pack.

Curriculum for Computer Network Assistant under Information and Communication Technology Sector for Modular Employable Scheme (MES) attached as annexure.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

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## SECTION 1 ASSESSMENT

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

DGT empanelled Assessing Bodies (ABs)

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

RPL arrangements are not planned under this qualification.

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.

#### Criteria for selection of Assessment body

Minimum Eligibility Criteria

- The applicant shall be a legal entity, registered in India.
- The applicant should have in last two years carried out competency / skill assessment for minimum 1000 persons or should have trained minimum 1000 persons and got tested by some agencies such as NCVT, Sector Skill Council, State, board/ council and reputed industry Association. Organizations having experience in testing of competencies would be preferred.
- In case more number of applications is received, preference will be given to those organizations that have trained/assessed larger number of persons.
- The applicant is not a Training Provider (TP) in the same sector and in same State, but it can be TP in other States, other Sectors or other scheme.
- The applicant shall have access to technically qualified personnel of repute and integrity in different industrial trades and technology.
- The applicant shall develop dedicated human resource for handling the processes in assessment process.
- The applicant shall declare its linkages with other organization(s), if any to ensure independence and avoid any conflict of interest.
- Institutions/ Firms blacklisted by any Government Department shall not be considered in this RFP.
- The Applicant shall provide the information and supporting documents towards their claims.
- Initially provisional empanelment will be awarded to the organizations based on the evaluation of eligibility of the Assessing Body based on the criteria.
- Based on the module and sector that will be handled by the assessor, the assessing body shall send its assessor for competency evaluation in the institutions which will be notified by DGT time to time. The assessor will be assessed to ascertain the competency to carry out competency based assessment.
- Final empanelment would be granted subject to the Assessing Body fulfilling the following conditions of getting the competencies of 2 assessors of each module per State evaluated in the institutes notified by the DGT. Testing charges for evaluating the competencies of the assessors will be borne by the Assessing Bodies.

#### (1) Assessment process:

The assessment process aims to test and certify the competency of the persons through Assessing Bodies who seek certification of their skills acquired informally or the persons who have been trained at the registered TPs. The competency assessment of the candidate is being done by the Assessor Competency Evaluation (ACE) qualified assessor of the independent Assessing Bodies (AB) which is not involved in training delivery, to ensure an impartial assessment. ACE is conducted to evaluate the competency of the assessor. In the assessment process, identification of competency, ways to measure the competency and deciding on the type of evidence that has to be collected are the responsibility of the Assessing bodies whereas administering the assessment and collecting the evidence and reporting the results are the responsibility of the assessors. The assessment process consists of following components:

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#### Theory Test:

- It must assess the knowledge which is essential for a person to do the job. Without this knowledge, the person will not be able to do the job.
- The questions shall be of objective type involving selection of correct response.
- The question paper should contain sketches/ diagrams/ photographs/ drawing to overcome the problems of reading comprehension.
- The test shall be of short duration.

#### **Practical Test:**

#### It shall be able to test:

- Manipulative skills to handle tools and equipment.
- Speed in doing work.
- Accuracy maintained
- Quality in workmanship.
- Sequence of performance.
- Economical use of material.
- Neatness & housekeeping.
- All the competencies prescribed in the course curriculum.

#### The Assessment Parameters adopted during assessment:

- Knowledge of equipment, limitation of use of tools and equipment, and methods & procedure.
- Understanding of functioning of equipment & tool, criteria to be used in selecting tools for given job, and the process of measurement.
- Skill in finishing to required measurement, handling measurement & calculations, handling tools and equipment with ease, finishing neatly.
- Abilities to take corrective steps, use correct work habits, take measurements, complete the job within stipulated time, and adopt safe practices.
- Attitude towards the work, accurate & precise work and co-workers and supervisor.

#### (2) <u>Duration of Test</u>:

The duration of test vary according to the task. Theory test shall be of 1 hour duration and practical test for engineering trade shall be 6 to 8 hours minimum and non-engineering it shall be of 4 hours minimum. Assessing Bodies while preparing practical test shall ensure that candidate shall be tested on all the competencies prescribed in the course module.

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

Terminal competency	Maximum marks
Application of knowledge	30
Care for tools & equipment	15
Economic use of materials	15
Safety consciousness	10
Speed	10
Accuracy	15
Quality of workmanship	20
Amount of work	15
No. of attempts	10
Attitude	10
Total maximum marks for Practical	150
Maximum marks for theory	50

#### (3) Minimum pass mark:

Minimum passing marks for Practical is 60% Minimum pass marks for theory is 40%

#### (4) Testing and certifications process for the course:

#### **Pre- Assessment**

• Regional Directorate of Apprenticeship Training (RDAT) allot batches to the Assessing Bodies on rotational basis depending on the presence of assessing body in that region sector wise and the assessing

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- body in coordination with Training Provider and assessor should confirm and schedule the assessment.
- The Assessing Body confirms the date of assessment in consultation with Training Provider and communicate to the RDAT/State.
- The Assessing Body forms a panel of ACE qualified assessors of high repute and integrity, sector wise and location wise.
- The assessment of the candidates is done by the Assessing Bodies in designated Testing Centre (TC). The Testing Centre where the assessment is carried out and Testing Centre can be Training Center also. The Assessing Body select the TC based on the location, accessibility and the infrastructure facilities available for conducting the test.
- The testing center is approved by the RDAT incase of courses run by DGT,MSDE. Incase where the courses are run by the Sate Govt., TC is approved by State Govt.. Training conducted by other dept. at their accredited Training Centre, same training centre is designated as Testing centre.
- The Assessing Body provide details of selected TC along with skill areas in which assessment can be done at the TC, to the RDAT and respective States/UTs.
- The Assessing Bodies depute ACE qualified assessors for assessments whose details are furnished by Assessing Bodies to DGT in advance.
- Assessing Body has to communicate to the Testing Centre following:
  - -Details of the candidates to appear for assessment in various MES courses.
  - -Details of Assessors selected with their contact details.
  - -Requirement of infrastructure, raw material etc.
  - -Testing charges to be reimbursed to Testing Centre

#### Preparation of assessment tools and prerequisites:

- The assessment tools contain components for testing the knowledge, application of knowledge and demonstration of skill. The knowledge test is objective paper based test or short structured questions based. The application of knowledge is verified based on questioning or seeking response for a case. Demonstration of skill is verified based on practical demonstration by the candidate.
- The type of assessment tools to be used for assessment are to be prepared in advance by the assessing body in accordance to the guidelines as prescribed below:
  - Define the performance objective This is based on the course objectives and competency in workplace as prescribed by MES curriculum. The written tests and practical tests assess all the competencies mentioned in course curriculum.
  - In case of practical test, the operations which are to be observed in case of process test (how a particular task is being carried out) are clearly mentioned and the specifications of the final product in case of product test (the task in itself).
  - List of tools, infrastructure, and equipment to carry out the assessment are prepared based on the test instruments that are planned to be used.
  - Written directions are given to the candidates before the task is attempted.
  - Scoring system, observations and rating is prepared for each competency which is going to be assessed.

#### Pre-assessment activities for Assessor at the Testing Centre

- Verification of student credentials: The assessor check the application form submitted by the candidates and verify the photo pasted on the forms with candidates who are taking assessment in accordance with checklist
- Verification of testing centre for adequate infrastructure, tools and equipment: The assessor verifies the availability of infrastructure, tools and equipment for carrying out both theory and practical assessments. The minimum requirement prescribed under the MES modules is used as benchmark.
- Attendance verification: The assessor checks the attendance register of candidates and instructors until the
  time biometric attendance system is put in place. Once the biometric attendance system is in place, the
  biometric attendance of assessors along with that of trainees/candidates has to be captured during the
  assessment at the start as well as end of theory and practical test.
- Attendance during assessment: The assessor takes the attendance of all the students who appear for assessment after the successful verification of the student credentials and before the start of the assessment. The assessor also provides his/her attendance during start and end of the practical and theory test.
- Verification of the documents related test carried out by Training Provider/ Testing Centre (TC) for candidates who were not able to produce document in support of having passed the qualification.

#### **Assessment activities**

Before the start of assessment, read out the instructions to the students.

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- The written test & practical test is for fixed duration as prescribed.
- It is ensured that individual attention is given to all the candidates during the practical test.
- The assessor takes photographs during the assessment process of all the students in the testing centre, the students during theory and practical tests, practical lab/workshop showing the equipment to be used for assessment, the assessor along with the students appearing for the assessment.

#### **Post-assessment activities**

- The assessor consolidates all the theory and practical test papers and ensures that all the mandatory information is filled. The total score for each student should be calculated and recorded in result sheet.
- The assessor send the attendance sheet, result sheet, answer papers by courier/post to the assessing body immediately after the completion of assessment
- Uploading outcome of the assessment and photos in portal by assessing body
- Assessing body upload the results within one week of the assessment date.
- Photos taken by the assessors during assessment are sent to respective RDATs through e-mail only. Non
  dispatch of photos of assessment to RDAT makes assessment void. Re-assessment of such batch is done by
  the Assessing Bodies on their own expenses.
- Details of assessors are emailed to RDAT at the time of uploading the outcome of the assessment. Outcome of the assessment is not accepted in case details of assessors are not emailed to respective RDAT.
- Maintaining assessment records
- Publishing of results and Certificate issue
- RDAT verifies the outcome of the assessment, details of assessors, photos and print and sign the certificates for successful candidates and send it to the respective candidates. In case of direct candidate's assessment, the Certificates are sent to the Assessing Body.
- Certificates which will be issued carry photograph of the trainee, name of Training Provider, start date & end date of training and duration of training once the systems for the same are put in place.
- The certificate is issues under the aegis of NCVT. All the communications are done through portal.

#### **ASSESSMENT EVIDENCE**

Complete a grid for each component as listed in "Formal structure of the the qualification" in the Summary.

NOTE: this grid can be replaced by any part of the qualification documentation which shows the same information – ie Learning Outcomes to be assessed, assessment criteria and the means of assessment.

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Title of Component: Computer Network Assistant

Outcomes to be assessed		Means of Assessment
Learning Outcome	Assessable Criteria	
DGT/MES/ICT/N24:	The candidate can able to:	Theory Test
Acquire Knowledge of	AO1. Describe the Computer Networks –	
Computer Networking	Advantages of Networking, Peer-to-Peer and	
and its Components.	Client/Server Network.	
and its Components.	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.	
	AO2. Describe Communication Media &	The arm Took
	Connectors –	Theory Test
	Unshielded twisted-pair (UTP), shielded	
	twisted-pair (STP), Fibre Optics and coaxial	
	cable: RJ-45, RJ-11, BNC.	
	Understanding color codes of CAT5 cable.	
	568A and 568B convention.	
	AO3. Explain the Data Communication –	Theory Test
	Analog and Digital Signals, Simplex, Half-	
	Duplex and Full-Duplex transmission mode.  AO4. Identify various Network devices, Connectors	Practical Test
		Practical Test
	and Cables. Understand the Layout of network.  Crimp straight and cross CAT 5 cables.	
	Punch in IO Box and patch panel.	
	Create cabling in a lab with HUB/Switch and	
	IO Boxes and patch panel. Fit Switch Rack.	
DGT/MES/ICT/N25:	AO1. Explain OSI Model - The functions of	Theory Test
Obtain Skills of installing	1	
& configuring Network	Network Components – Modems, Firewall, Hubs,	
ov vomigwing riverwork	Bridges, Routers, Gateways, Repeaters,	
	Transceivers, Switches, Access point, etc. – their	
	functions, advantages and applications.	
	AO2. Demonstrate to install & Configure a Peer-	Practical Test
	to-Peer	Fractical Test
	Network using Windows Software. Make cables	
	by crimping. Connect computers using Bluetooth. Wi-Fi.	
	Basic Programmable switch Configuration	
	AO3. Describe the protocols, TCP/IP, FTP, Telnet	Theory Test
	etc., Setting IP Address(IP4/IP6) & Subnet Mask,	
	Classes of IP Addressing	
	AO4. Demonstrate Simple Mail Transfer Protocol	Practical Test
	(SMTP), Telnet, File Transfer Protocol (FTP),	
	Hyper Text Transfer Protocol (HTTP), Simple	

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	N. d. a. I. M. a. a. a. a. I. (CNIMD). N. d. a. I.	
	Network Management Protocol (SNMP). Network	
	Security	
	Concept of Dynamic Host Control Protocol	
	Working with SMTP, TELNET, FTP, HTTP,	
	SNMP etc. and able to configure DHCP.	
	AO5. Explain concept of Internet. Architecture of	Theory Test
	Internet. DNS Server. Internet Access Techniques,	
	ISPs and examples (Broadband /Dialup /Wifi).	
	Concept of Social Networking Sites, Video Calling	
	& Conferencing. Concept of VIRUS and its	
	Protection using Anti Virus, UTM and Firewall.	
	AO5. Demonstrate to Share Resource and Advance	Practical Test
	Sharing Setting. Install Proxy Server, Set E-mail	
	accounts. Conferencing. Install and Configure	
	Internet	
	Connection on a PC using Broadband or Dongle.	
	AO6. Demonstrate Network Protection and	Practical Test
	troubleshooting. Setting up basic protection using	
	public keys and MAC address filters. Integrate	
	wired with wireless network. Power over	
	Ethernet(PoE). Troubleshooting wired and wireless	
	network.	
	AO7. Describe the Surveillance using network	Theory Test
	devices, collaboration on network for team	Theory Test
	optimization and support activities. Remote	
	management of devices.	
	AO8. Demonstrate to Control & monitor network	Practical Test
	devices.	Practical Test
	Set 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.	
	AO9. Describe the Server concepts, Installation	Theory Test
	steps, configuration of server. Concept of Active	
	Directory and DNS. Setting up of DHCP, Routing	
	and remote access.	
	AO10. Perform Server Installation & Basic	Practical Test
	Configuration. Install and configure Windows	
	Server.	
	Configure services like Active Directory, DNS and	
	DHCP.	
	Configure broadband modem and sharing internet	
	connection. Linux Network Tools to Check /	
	Maintain / Manage Network.	
DGT/MES/ICT/N26:	AO1. Describe the Network Security like	Theory Test

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	I	
Have knowledge of	Modern Network Security Threats and the basics of	
Network security	securing a network.	
	Secure Administrative Access, LAN security	
	considerations. Cryptography. Wi-fi security	
	considerations.	
	AO2. Demonstrate to work on firewall technologies	Practical Test
	to secure the network perimeter, LAN security	
	considerations and implement endpoint and Layer 2	
	security features.	
	Wi-fi configuration to implement security	
	considerations.	
	AO3. Explain Internet and Web Browser, World	Theory Test
	wide web and website Web Browsing and popular	
	web browsing software.	
	Introduction to Search Engines, Popular Search	
	engines.	
	Concept of Favourites Folder. Electronic Mail.Email	
	Addressing, BCC and CC, Inbox, Outbox, Address	
	book, SPAM.	
	AO4. Demonstrate to browse using popular web	Practical Test
	browsing software, Configuring web browser.	
	Using e-mail – Opening & 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.	

#### Means of assessment 1

The assessment comprise of

- Theory Examination MCQ, VIVA Voce
- Practical assessment Role plays, Demonstration

#### Pass/Fail

The trainee is judged as pass in the qualification if minimum passing marks is obtained in each test i.e Theory and Practical.

Minimum pass mark:

Minimum passing marks for Practical is 60%

Minimum pass marks for theory is 40%

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SECTION 2
EVIDENCE OF LEVEL

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#### **OPTION A**

Title/Name of qualification/component: Computer Network Assistant		Level: 3	
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
Process	The job holder is expected to have the knowledge and display expertise skills in the field of work like:  Basic operation of networking and its devices  Fundamentals of Network security and Internet basics  Basic concepts of Network devices repair and maintenance  Understanding of faults of computer network systems	The job requires the limited range of activities routine and predictable like repairing and Installing of computer network devices and ensuring network security in an organisation.	3
Professional knowledge	The job holder is required to have knowledge in the related field of work like:  - Basic operation of networking and its devices - Fundamentals of Network security and Internet basics - Basic concepts of Network devices repair and maintenance - Understanding of faults of computer network systems	The job holder understands the basic facts, process and principles involved in his job role like basics of Networking, function and installation of networking devices.	3
Professional skill	The job holder is needs to know and understand:  - diagnosis of faults of computer network systems  - Practical applications of test systems.  - Planning for configuration  - Inspection and testing of configured computer systems  - Plan and prepare for the maintenance of computer network systems	The job role only includes the Assembling and Maintenance of Computer Network Systems as per the customer requirement which is routine and repetitive in narrow range of application.	3
Core skill	The job holder is expected to be Possess knowledge and	The Job holder will able to repair and maintain	3

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Title/Name of qualification/component: Computer Network Assistant		Level: 3	
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	skills regarding:  - Tools of MS office for communication and presentations  - Fundamental internet browsing techniques, associated risks for to communicate with consumers and suppliers	computer network systems as per the standard manuals. Can operate Internet to communicate with the suppliers and consumers for marketing.	
Responsibility	The job holder works under the supervision of his superior, as per his directions. He is responsible for his designated task as and when given by the superior.	The job holder works under the supervision of his superiors and is responsible for his own limited work assigned.	3

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## SECTION 3 EVIDENCE OF NEED

#### What evidence is there that the qualification is needed?

The increase demand in IT industry would be driven by increasing by household spend on IT, Education, as well as domestic IT demand by Indian companies and MNC established in India

The Indian IT & ITeS industry employs about 3 million directly and 9 million indirectly. A majority of employment is generated through the exports business. Exports contribute about 78 percent of the total employment in the sector. Employment growth was high during FY02–09 period, however, it started settling down with the increasing maturity of the sector and the evolution of non-linear business models

The sector is expected to employ about 5.1 million professionals directly in FY22 and exports are likely to dominate

(Executive Summary Human Resource and Skill Requirements in IT & ITes by NSDC: Annexure 3)

Moreover more than 1250 individuals have been trained in this course under this scheme in last two years, which shows there is huge requirement of this skill in the Market.( Annexure 4)

About 425 candidates have been placed across country by getting trained under this Course under MES in 2016 which indicates the demand of the above qualification. (Annexure 5)

#### What is the estimated uptake of this qualification and what is the basis of this estimate?

According to the NSDC, Modularised skill building in these areas is required to ensure constant up-gradation of skills in the projected workforce of 5.1 million persons by 2022. Out of this about 70% to 80 % would be in the junior to midlevel streams (about 4-5 million). Building skills in this workforce is critical for industry to maintain its competitive edge and innovate

# What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF?

The Qualification has been mapped with the National Qualification Register, maintained by NSDA to ensure the qualification does not duplicate. Qualification naming Field Technician – Networking and Storage is available in NQR with some outcomes common. The above qualification has wide knowledge and practice in terms of hours and course material.

# 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?

- 1) DGT interacts with training providers to gather feedback in implementation and updation of qualification.
- 2) Monitoring of results of assessments
- 3) Employer feedback will be sought post-placement
- 4) In a recent initiative, a Mentor Council (MC) for the relevant sector has been formed to review the curriculum of this qualification under the sector.
- 5) CSTARI, the research wing of DGT, reviews and updates the qualification, in consultation with industries and other stakeholders, on a regular basis.

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The qualification is reviewed after every 2 years for updation according to latest Technologies and practices.

Please attach any documents giving further information about any of the topics above.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

#### **SECTION 4**

#### **EVIDENCE OF PROGRESSION**

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?

An Individual has vertical pathway to promote to higher designations in an organisation. Can further undergo specialization course to excel to the higher post in jobs listed above or can start with up his/her own business.

Progression chart:

Computer Network Assistant > Computer Network Executive > Network Engineer > Entrepreneur

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