QUALIFICATION FILE – CONTACT DETAILS OF SUBMITTING BODY

Name and address of submitting body:

IT-ITeS Sector Skills Council NASSCOM (SSC NASSCOM)

4E, Vandhana Building (4th Floor)

11, Tolstoy Marg, Connaught Place, New Delhi - 110001

Name and contact details of individual dealing with the submission

Name: Dr. Sandhya Chintala

Position in the organisation   CEO

Address if different from aboveNA

Tel number(s)	41520724, 41519230/60
E-mail address	sandhya@nasscom.in

List of documents submitted in support of the Qualifications File

1. Functional Map for the job role
2. Occupational Analysis for Software Product Development
3. Qualification Pack
4. Career Map for the job role / occupation: vertical and horizontal mobility
5. Test Matrix Template
6. Talent Demand Supply Analysis Report

QUALIFICATION FILE SUMMARY

Qualification Title	QA Engineer
Body/bodies which will assess candidates	IT-ITeS Sector Skills Council NASSCOM (SSC NASSCOM)
Body/bodies which will award the certificate for the qualification.	SSC NASSCOM
Body which will accredit providers to offer the qualification.	SSC NASSCOM Presently, Accreditation is not prescribed; affiliation is one of the models.
Occupation(s) to which the qualification gives access	Testing & Quality Assurance
Proposed level of the qualification in the NSQF.	7
Notional Learning Hours	400hours approx. (customisable as per learner background)
Entry requirements / recommendations.	Bachelor's Degree in Science/Technology/Computers or any other graduate course
Progression from the qualification.	As shown in the career map (attachment sl.no. 4)
Planned arrangements for RPL.	- Response to market forces for RPL - RPL assessments will be the same as our normal assessments. - MOUs / Agreement in place for institutions, Retail is work in progress

Formal structure of the qualification

Title of unit or other component (include any identification code used)	Mandatory/ Optional	Estimated size (learning hours)	Level
SSC/N1304 (Contribute to quality assurance of projects)		200	
SSC/N9001 (Manage your work to meet requirements)		50	
SSC/N9002 (Work effectively with colleagues)		50	7
SSC/N9003 (Maintain a healthy, safe and secure working environment)		25	
SSC/N9004 (Provide data/information in standard formats)		50	
SSC/N9005 (Develop your knowledge, skills and competence)		25	

Please attach any document giving further detail about the structure of the qualification – eg a Curriculum or Qualification Pack. Give details of the document here: Qualification Pack (attachment Sl no. 3)

SECTION 1
ASSESSMENT

Name of assessment body:
If there will be more than one assessment body for this qualification, give details.

- SSC NASSCOM is the assessment body, which affiliates assessment providers.

Will the assessment body be responsible for RPL assessment?

Give details of how RPL assessment for the qualification will be carried out and quality assured.

- Yes.
- It is online, objective evaluation in a highly secure and proctored environment.
- RPL assessments will be the same as our normal assessments.
- All procedures followed will be similar to the normal assessment methodology.
- Issuance of the qualification will be through the centralise SDMS (NSDC).
- Quality assurance – By equating performance amongst the multiple affiliated assessment provider (AAP) and periodic analytical review and sensitivity analysis for the reliability and validity of all aspects of assessments. AAP only refers to agency/organisation.

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

- SSC NAASCOM carries out online assessments through very robust platforms and proctoring methodology.
- AAP affiliated to SSC NASSCOM come with strong industry references and long experience and analytical ability in assessment methodologies.
- Periodic workshops are held with the vendors to bring them to a common understanding of the job role, its NSQF level, difficulty level as well as format and sample of assessment items.
- Internal moderations further ensure the validity and reliability of the assessments and consistency of difficulty levels of the test questions across AAPs.
- AAPs work with hirers on similar job roles, they use SMEs from their network to get industry relevant scenarios and assessment items aligned to the expected outcomes of the job role/QP.
- Curriculum and real time scenarios facilitate further understanding the scope of the QP with reference to process knowledge and skills.
- In addition, we conduct workshops with AAPs w.r.t. beta testing, review of the assessment analytics, performance of the test platform, moderation of NSQF levels, deployment and invigilation patterns and infrastructure requirements including malpractice avoidance.
- Inferences from benchmarking and analytics patterns are taken into consideration in the development and revision of the assessment criteria and format of assessment items.
- Reliability and validity of assessment items is standardised among AAPs.
- Difficulty level of test items with reference to NSQF levels are ensured, so that the outcomes with reference to performance criteria of the constituent NOSs are in line with the NSQF level descriptors. This is achieved through the detailed test matrix design.

Please attach any documents giving further information about assessment and/or RPL.
Give details of the document(s) here:

A detailed Test Matrix is used to design each assessment before it is launched for public view. Template for detailed test matrix is attached.
Public view of the assessment criteria is included in the qualification pack.

ASSESSMENT EVIDENCE

Complete the following grid for each grouping of NOS, assessment unit or other component as listed in the entry on the structure of the qualification on page 1.

Job Role   QA Engineer

Qualification Pack   SSC/Q7002

Sector Skill Council IT-ITeS

Guidelines for Assessment:

1. Criteria for assessment for each Qualification Pack (QP) will be created by the Sector Skill Council (SSC). Each performance criteria (PC) will be assigned Theory and Skill/Practical marks proportional to its importance in NOS.
2. The assessment will be conducted online through assessment providers authorised by SSC.
3. Format of questions will include a variety of styles suitable to the PC being tested such as multiple choice questions, fill in the blanks, situational judgment test, simulation and programming test.
4. To pass a QP, a trainee should pass each individual NOS. Standard passing criteria for each NOS is 70%.
5. For latest details on the assessment criteria, please visit www.sscnasscom.com.

Title of NOS/Unit/Component:

Assessable Outcomes	Assessment criteria for the outcome	Total Mark	Out of	Theory	Skills Practical
1.SSC/N1304 (Contribute to quality assurance of projects)	PC1. establish clearly the scope of your role and responsibilities in relation to quality assurance	**100**	5	5	0
	PC2. check that projects comply with your organization's requirements during every phase		5	5	0
	PC3. collect required data/information against key indicators using standard templates and tools		10	0	10
	PC4. analyze data/information to accurately identify risks to projects		10	0	10
	PC5. generate reports on checks carried out, data/information collected and risks identified using standard templates and tools		10	0	10
	PC6. schedule review meetings at agreed project milestones		5	5	0
	PC7. provide required information to project management reviewers, internal auditors and technical reviewers in time for review meetings		5	5	0
	PC8. check that the key actions from review meetings are accurately recorded		10	0	10
	PC9. monitor project progress to check that key actions are taken on time		5	5	0
	PC10. obtain advice and guidance from appropriate people, where necessary		5	5	0
	PC11. comply with relevant standards, policies, procedures, guidelines and service level agreements (SLAs) when contributing to quality assurance		10	0	10

	PC12. carry out root cause analysis of process failures in projects to facilitate process improvements		10	0	10
	PC13. identify and share good practice with others to improve productivity		10	0	10
		Total	100	30	70
2.SSC/N9001 (Manage your work to meet requirements)	PC1. establish and agree your **workrequirements** with **appropriate people**	**100**	6.25	0	6.25
	PC2. keep your immediate work area clean and tidy		12.5	6.25	6.25
	PC3. utilize your time effectively		12.5	6.25	6.25
	PC4. use **resources** correctly and efficiently		18.75	6.25	12.5
	PC5. treat confidential information correctly		6.25	0	6.25
	PC6. work in line with your organization's policies and procedures		12.5	0	12.5
	PC7. work within the limits of your job role		6.25	0	6.25
	PC8. obtain guidance from **appropriate people**, where necessary		6.25	0	6.25
	PC9. ensure your work meets the agreed requirements		18.75	6.25	12.5
		Total	100	25	75
3.SSC/N9002 (Work effectively with colleagues)	PC1. communicate with colleagues clearly, concisely and accurately	**100**	20	0	20
	PC2. work with colleagues to integrate your work effectively with theirs		10	0	10
	PC3. pass on essential information to colleagues in line with organizational requirements		10	10	0
	PC4. work in ways that show respect for colleagues		20	0	20
	PC5. carry out commitments you have made to colleagues		10	0	10
	PC6. let colleagues know in good time if you cannot carry out your commitments, explaining the reasons		10	10	0
	PC7. identify any problems you have working with colleagues and take the initiative to solve these problems		10	0	10
	PC8. follow the organization's policies and procedures for working with colleagues		10	0	10
		Total	100	20	80
4.SSC/N9003 (Maintain a healthy, safe and secure working environment)	PC1. comply with your organization's current health, safety and security policies and procedures	**100**	20	10	10
	PC2. report any identified breaches in health, safety, and security policies and procedures to the designated person		10	0	10
	PC3. identify and correct any hazards that you can deal with safely, competently and within the limits of your authority		20	10	10

	PC4.　report any hazards that you are not competent to deal with to the relevant person in line with organizational procedures and warn other people who may be affected		10	0	10
	PC5.　follow your organization's **emergency procedures** promptly, calmly, and efficiently		20	10	10
	PC6.　identify and recommend opportunities for improving health, safety, and security to the designated person		10	0	10
	PC7.　complete any health and safety records legibly and accurately		10	0	10
		Total	100	30	70
5.SSC/N9004 (Provide data/information in standard formats)	PC1. establish and agree with appropriate people the data/information you need to provide, the formats in which you need to provide it, and when you need to provide it	**100**	12.5	12.5	0
	PC2. obtain the data/information from reliable sources		12.5	0	12.5
	PC3. check that the data/information is accurate, complete and up-to-date		12.5	6.25	6.25
	PC4. obtain advice or guidance from appropriate people where there are problems with the data/information		6.25	0	6.25
	PC5. carry out rule-based analysis of the data/information, if required		25	0	25
	PC6. insert the data/information into the agreed formats		12.5	0	12.5
	PC7. check the accuracy of your work, involving colleagues where required		6.25	0	6.25
	PC8. report any unresolved anomalies in the data/information to appropriate people		6.25	6.25	0
	PC9. provide complete, accurate and up-to-date data/information to the appropriate people in the required formats on time		6.25	0	6.25
		Total	100	25	75
6.SSC/N9005 (Develop your knowledge, skills and competence)	PC1. obtain advice and guidance from appropriate people to develop your knowledge, skills and competence	**100**	10	0	10
	PC2. identify accurately the knowledge and skills you need for your job role		10	0	10
	PC3. identify accurately your current level of knowledge, skills and competence and any learning and development needs		20	10	10
	PC4. agree with appropriate people a plan of learning and development activities to address your learning needs		10	0	10
	PC5. undertake learning and development activities in line with your plan		20	10	10
	PC6. apply your new knowledge and skills in the workplace, under supervision		10	0	10

	PC7. obtain feedback from appropriate people on your knowledge and skills and how effectively you apply them		10	0	10
	PC8. review your knowledge, skills and competence regularly and take appropriate action		10	0	10
		Total	100	20	80

Means of assessment 1

Proctored online assessments (LAN and Web based), carried out using a variety of question formats applicable for linear / adaptive methodologies; performance criteria being assessed via situation judgement tests, simulations, code writing, psychometrics and multiple choice questions etc.

Means of assessment 2

Presently not considered.

SECTION 2

EVIDENCE OF NEED

What evidence is there that the qualification is needed?

Sector wise occupational analysis lends weight to the need of the qualification prescribed. The research documents pertaining to this sub-sector are attached as per sl. Nos 2 and 6 respectively (Occupational Analysis report for the sub-sector" and "Talent Demand Supply Analysis Report").

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

Overview of the occupational demand that includes 'Design Engineer-Product Manufacturing Support',is available in the talent demand supply document. NASSCOM's Strategic Review, 2015 articulates 2.30 lakh as new hires for the IT-BPM industry in FY 2014-15. In that, IT exports (includes ITS, ERD, SPD segment) covers 1.4 lakh, BPM – 40,000 and IT domestic (all inclusive) is 50,000.

In current FY 15-16, the expected net employment addition is going to be between 2 lakhs to 2.30 lakhs.

Further research is being undertaken to predict the qualification need for individual job roles.

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

Cleared by QRC at NSDC. It is available on public view for more than a year and has not been contested till date.

* As the understanding and adoption models of QPs evolve in the industry and across its sub-sectors, we foresee consolidation of qualification packs as a natural progression.

Note: This Job Role also exists in the IT sub-sector as QA Engineer (SSC/Q1302). A clear distinction as been identified between the job responsibilities & the technical & organisational knowledge & understanding required by an individual at this job with respect to the two different sub-sectors which are Information Technology &Software Product Development.

Explaining the factors of distinction.

Factors of Distinction	*QA Engineer (SSC/Q7002) for the SPD Sub-Sector*	*QA Engineer (SSC/Q1302) for the IT Sub-Sector*
Occupational Roles& knowledge required	Software Products are programmes or code sets of any type, commercially availablethrough sale, lease, rental, or as a service. Packaged software revenues typically include fees for initial and continued right-to-use packaged software licenses.	IT Services (ITS) sub-sector offers services to create and manage information for business functions through host of activities that include consulting, systems integration, IT outsourcing/managed services/hosting services, training and support/ maintenance.
	The IT Industry segment catering services to this area – through all or any of the product life-cycles – is referred to as the Software Products sub-sector.	
		An individual at this job role has have domain knowledge to carry our quality assurance activities with respect to IT enabled services & software development. He/she should have a good understanding of the quality parameters & norms applicable to this sub-sector.
	This sub-sector also encompasses the off-shore development of the customer'sproduct or Off-shored Software Products Development	

		(OSPD). Responsibility of different aspects of the product life-cycle - R&D, prototype, development, test execution, maintenance, support and development of next generation of products lies with an off-shore team/vendor/organisation. An individual at this job role has have domain knowledge to carry our quality assurance activities with respect to software product lifecycles. He/she should have a good understanding of the quality parameters & norms applicable to this sub-sector.	
Career Progression	An individual at this job can cater to job roles into Product Lifecycle Management,Product Development and Delivery, Product Integration and Deployment,Product Support, etc.	An individual at this job can cater to job roles intoApplication Development, Application Outsourcing,Application Deployment, etc.	

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?

- Monitoring and review of the qualifications is a project executed every two years. Presently, the research project is scheduled to take off.
- While adoption by industry and academia is one good indicator for the usefulness of a qualification pack, we adopt multiple approaches for periodic review and maintenance of the qualifications.
    1. Sub-sector wise Industry council, headed by council chair is a formal part of our governing structure. The council participates and steers the qualifications creation and upkeep. This council is a body elected by over 1800 member companies of NASSCOM.
    2. Special interest groups are formed for a more focused and detailed review of the qualifications in the light of emerging knowledge and skill areas.
    3. Events and workshops are conducted periodically to validate, monitor and review the qualification.
    4. As a part of due diligence process for affiliating Training providers, we do ask them for validation from their hirers – thus covering even medium, small and micro segment of the hiring companies.
    5. Any institution / individual is welcome to send feedback, which is recorded and considered during next review cycle.

The above data is used to update the Qualification and this revision is published annually. Nonetheless, if a major feedback is received prior to the planned review period, the change is considered in consultation with the industry council.

Please attach any documents giving further information about any of the topics above.
Give details of the document(s) here:Occupation analysis report for Software Product Development Sub-sector (attachment sl no. 2)

SECTION 3
SUMMARY EVIDENCE OF LEVEL

Level of qualification: 7

Summary of Direct Evidence:

Justify the NSQF level allocated to the QP by building upon the five descriptors of NSQF.Explain the reasons for allocating the level to the QP.

Generic NOS is/are linked to the overall authority attached to the job role.

QA Engineer - SSC/Q7002					
Process required	**Professional knowledge**	**Professional skill**	**Core skill**	**Responsibility**	**Level**
Individuals in this job **require a command of wide ranging specialized theoretical and practical skills,** for coordination with the support and operations teams to maintain quality related schedules like audits, records and reports. The job involves setting quality standards for products, systems and processes within the organisation, followed by ensuring their effective implementation.	Individual at this job should have a **wide ranging, factual and theoretical knowledge within the field of work or study,** for coordination with the support and operations teams to maintain quality related schedules like audits, records and reports. He/she should know & understand: • the methods of collecting data/information for quality assurance and how to apply these • how to analyze data/information and how to use this analysis to identify risks to projects • how to identify project risks	Individual at this job should have a **wide range of cognitive and practical skills required** for setting quality standards for products, systems and processes within the organisation, followed by ensuring their effective implementation. He/she should know & understand: • the principles of effective quality assurance of projects • objectives and scope of the quality assurance work being undertaken • key indicators for the quality assurance of projects and why projects must comply with these • methods of collecting data/information to quality assure projects and how to apply these • the range of standard tools and templates available for quality assurance of projects and how to use them	Individual at this job require **good logical and mathematical skills,** for coordination with the support and operations teams to maintain quality related schedules like audits, records and reports. This job requires the individual to work independently and be comfortable in making decisions pertaining to his/her area of work. The individual should be result oriented with high attention to detail. The individual should also be able to demonstrate analytical and logical thinking to develop innovative solutions.	Individuals in this job are responsible for coordination with the support and operations teams to maintain quality related schedules like audits, records and reports. The job involves setting quality standards for products, systems and processes within the organisation, followed by ensuring their effective implementation. This job requires the individual to work independently and be comfortable in making decisions pertaining to his/her area of work. These tasks will require the	**7**

	and their potential/actual impact • the principles of project management and project lifecycle models • different quality tools in your organization and how to use these	• the types and purpose of data/information provided to management reviewers, internal auditors & technical reviewers • how to record, report and present data/information • your organization's procedures for sharing information/data with others • the importance of providing timely and accurate information to others • how to identify project risks and their potential/actual impact • the purpose of scheduling regular review meetings and how to do this • how to monitor and report on progress • what to do when actions have not been completed on time • the importance of conducting root cause analysis and how to do this • how to conduct trend analysis • how to determine examples good practice • how to carry out unit level analysis of multiple projects • the importance of project commitments to customers • how to review and track improvement plans	The core & generic job skills to **collecting and organising information, communication** that an individual should have, will help him/her **understand**& manage assigned works in the context of **the social environment** of the customer.	individual to take **responsibility of his/her own work and learning and full responsibility other's work & learning.** Individual at this job does not work under supervision, as needed at Level 3 & is responsible for his/her own learning. He/she is fully responsible for other's work & learning (unlike not/partially as in level 4/5). He/she is also sometimes fully responsible for the output of the group. Therefore, this QP is justified to be pegged at Level 7.	

Summary of other evidence (if used):
  • Validated by Industry council through various workshops and through training provider stake holders

SECTION 4

EVIDENCE OF RECOGNITION OR 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?

This qualification has been through workshops and consultations.
Adequate NOSs / performance criteria have been added to ensure progression to related path ways identified as per the occupational career map.

Please attach any documents giving further information about any of the topics above.
Give details of the document(s) here:

NA

SECTION 5

EVIDENCE OF INTERNATIONAL COMPARABILITY

List any comparisons which have been established.

Our standards follow the IT-ITeS industry requirements which caters to global markets.