Model Curriculum

QP Name: Cloud Computing – Jr. Analyst

QP Code: TEL/Q6215

Version: 1.0

NSQF Level: 4

Model Curriculum Version: 1.0

Telecom Sector Skill Council || 3rd Floor, Plot No 126, Sector – 44
Gurgaon - 122003

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Training Parameters

Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation & Maintenance
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/1330.6215
Minimum Educational Qualification and Experience	Class 12th Pass (with vocational education in IT) **OR** Class 10th + ITI (2 years in Electronics/Telecom/IT and other relevant fields) **OR** Class 10th Pass and pursuing continuous regular schooling **OR** Class 10th with 2 years of relevant experience **OR** Class 8th Pass + ITI (2 years in Electronics/Telecom/IT and other relevant fields) with 2 years of relevant experience **OR** Diploma after Class 10th (3 years in Electronics/Telecom/IT and other relevant fields)
Pre-Requisite License or Training	NA
Minimum Job Entry Age	17 Years
Last Reviewed On	30/06/2022
Next Review Date	30/06/2025
NSQC Approval Date	30/06/2022
QP Version	1.0
Model Curriculum Creation Date	30/06/2022
Model Curriculum Valid Up to Date	30/06/2025
Model Curriculum Version	1.0
Minimum Duration of the Course	450 Hours
Maximum Duration of the Course	450 Hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills to:

- Describe the process of preparation for software or application cloud testing.
- Demonstrate the process of carrying out cloud testing and fixing the identified bugs and defects.
- Explain the importance of implementing effective communication and coordination at work.
- Explain the importance of manage work and resources and ensure health and safety at work.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Bridge Module	**08:00**	**04:00**	**12:00**	**-**	**24:00**
Module 1: Introduction to the role of Cloud Computing – Jr. Analyst	08:00	04:00	12:00	-	24:00
TEL/N6247: Prepare for Software or Application Cloud Testing **NOS Version-1.0** **NSQF Level- 4**	**40:00**	**78:00**	**54:00**	**-**	**172:00**
Module 2: Process of preparing for software or application cloud testing	40:00	78:00	54:00	-	172:00
TEL/N6248: Carry out cloud testing and fix the identified bugs and defects **Version-1.0** **NSQF Level- 4**	**40:00**	**80:00**	**54:00**	**-**	**174:00**
Module 3: Process of carrying out cloud testing and fixing the identified bugs and defects	40:00	80:00	54:00	-	174:00
TEL/N9101: Organise Work and Resources as per Health and Safety Standards **NOS Version-1.0** **NSQF Level-4**	**16:00**	**24:00**	**00:00**	**-**	**40:00**

Module 4: Process of organising work and resources as per health and Safety standards	16:00	24:00	00:00	-	40:00
TEL/N9102: Interact Effectively with Team Members and Customers **NOS Version-1.0** **NSQF Level-4**	**16:00**	**24:00**	**00:00**	**-**	**40:00**
Module 5: Process of interacting effectively with team members and customers	16:00	24:00	00:00	-	40:00
Total Duration	**120:00**	**210:00**	**120:00**	**-**	**450:00**

Module Details

Module 1: Introduction to the role of a Cloud Computing – Jr. Analyst

Bridge Module

Terminal Outcomes:

- Discuss the job role of a Cloud Computing – Jr. Analyst.
- Explain the scope of work for a Cloud Computing – Jr. Analyst.

Duration: 08:00	**Duration: 04:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the size and scope of the Telecom industry and its sub-sectors. • Discuss the role and responsibilities of a Cloud Computing – Test Analyst. • Identify various employment opportunities for a Cloud Computing – Test Analyst. • Discuss the organisational policies on workplace ethics, managing sites, quality standards, personnel management and public relations (PR). • Describe the process workflow in the organization and the role of Cloud Computing – Test Analyst in the process. • List the various daily, weekly, monthly operations/activities that take place at the site under a Cloud Computing – Test Analyst.	• Role play based on case studies, outlining the scope, responsibilities, and challenges of a Cloud Computing – Test Analyst. • Analyse the requirements for the course and prepare for the pre-requisites of the course.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
NA	

Module 2: Process of preparing for software or application cloud testing

Mapped to TEL/N6247 v1.0

Terminal Outcomes:

- Explain the importance of determining the client requirements.
- Describe the process of preparing for cloud testing.

Duration: 40:00	Duration: 78:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain various cloud computing tools and applications, such as data storage, servers, databases, networking, software, analytics, etc. • Explain the benefits of cloud computing, such as lower operating costs, the ability to run the infrastructure more efficiently, easy data backup, efficient business continuity management, etc. • Explain different types of cloud computing models, i.e., public cloud, private cloud, and hybrid cloud. • Explain different categories of cloud computing services, i.e., infrastructure as a service (IaaS), platform as a service (PaaS), server-less computing, and software as a service (SaaS). • Describe various cloud computing-related services, such as on-demand software services, audio and video streaming, data storage, backup and recovery, etc. • Explain how to use cloud-based testing labs, on-demand testing tools, and device clouds. • Describe the concept and process of service virtualization. • Explain the benefit of carrying out cloud testing on a high-speed network, such as the 5G network. • Explain the importance and process of carrying out requirement study to determine the client's requirements. • Explain how to identify the areas	• Demonstrate the process of carrying out requirement study to determine the client's requirements, and complete functional documentation based on the requirement study. • Show how to develop frontend, backend and integration test cases according to the test scenarios. • Demonstrate how to prepare the requirement traceability matrix. • Demonstrate how to prepare comprehensive test plans based on product requirements, including requirement traceability, schedules, etc. • Show how to prepare the test plan document, including the schedules.

requiring automation testing or manual testing. • Explain how to identify different types of test scenarios in cloud computing. • Explain the importance and process of developing frontend, backend and integration test cases according to the test scenarios. • Explain how to map the requirement with test cases. • Describe the process of preparing the test environment and data. • Explain how to prepare the requirement traceability matrix. • Describe the process of developing the test procedures. • Explain the importance and process of preparing comprehensive test plans based on product requirements, including requirement traceability, schedules, etc. • Explain the importance and process of identifying data security risks associated with cloud testing and the appropriate preventive measures to be taken to prevent or mitigate them. • Explain the importance of reviewing the test plans and scripts thoroughly and revising them, as per the requirement. • Describe the process of preparing the test plan document getting it approved.	
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Laptop/Desktop with pre-installed (SaaS, Traceability Software, SOASTA Cloud Test) languages/ Software.	

Module 3: Process of carrying out cloud testing and fixing the identified bugs and defects

Mapped to TEL/N6248 v1.0

Terminal Outcomes:

- Demonstrate the process of carrying out cloud testing and fixing the identified bugs and defects.

Duration: 40:00	Duration: 80:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the difference between functional and non-functional tests. • Explain the importance of carrying out various functional and non-functional tests for a software/ application. • Explain the importance and process of checking communication between all the layers of the software/ application, considering various scenarios and probabilities • Explain the importance of ensuring compliance with the data security, handling and retention standards applicable to different geographical locations • Explain the importance of ensuring high Mean time between failures (MTFB). • Explain the importance and process of analyzing user stories and use cases/requirements for validity and feasibility. • Explain the importance of detecting and tracking software/ application defects and inconsistencies during testing. • Explain the importance of ensuring that the services provided by the software/ application are consistent with its specifications. • Explain the importance of ensuring appropriate test coverage and high quality of production project delivery. • Explain the importance of ensuring the software/ application	• Demonstrate the process of carrying out requirement-based testing or business process-based testing. • Demonstrate the process of carrying out multi-tenancy testing and stress and load/ performance testing. • Show how to check the scalability of the software/application and adherence to the applicable Service Level Agreements (SLAs). • Demonstrate the process of performing the necessary security test to ensure all the sensitive information is protected against unauthorized access and privacy of authorized users is maintained. • Demonstrate the process of carrying out data integrity test in the cloud system and compatibility testing for various compatibility metrics. • Demonstrate the process of carrying out an acceptance test to determine whether the software/ application meets the business requirement specifications and delivery criteria for end-users. • Demonstrate the process of carrying out system verification test to ensure various modules of a particular function perform as intended. • Demonstrate the process of carrying out interoperability test and availability test. • Demonstrate the process of carrying out negative testing to ensure the software/ application under testing is able to get back to functioning

performance, maintainability, serviceability, and reliability.	appropriately following an error, without manual intervention. • Demonstrate the process of performing testing of the Disaster Recovery (DR) process, endurance testing, accounting for memory leak issues, efficient error handling and recovery mechanism. • Demonstrate how to perform testing and automation of 5G application software on cloud native platform. • Demonstrate how to identify, record, and document all bugs within the bug tracking software. • Demonstrate the use of the test automation framework to automate test cases and enhance the test framework, as necessary. • Show how to detect and track software/ application defects and inconsistencies. • Show how to determine the root cause for software/ application issues. • Demonstrate the process of performing thorough regression and ad hoc testing in all aspects of the software/ application when bugs are resolved. • Demonstrate the process of carrying out relevant documentation to report the test activities to the stakeholders.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Laptop / Desktop with (Test Software like Blazemeter/ Load Storm/ Nessus, TestSigma) languages / Software pre-installed.	

Module 4: Process of organising work and resources as per health and Safety standards

Mapped to NOS TEL/N9101 v1.0

Terminal Outcomes:

- Explain the importance of performing work as per quality standards.
- Explain the importance of maintaining a safe, healthy and secure working environment.
- Explain the importance of conserving material/energy/electricity.
- Describe the process of using effective waste management/recycling practices.

Duration: 16:00	Duration: 24:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain various strategies pertinent to their field (such as internet searches, asking peers and managers, enrolling for courses and certifications, etc.) that can be used to pursue advancement in their skills. • State key performance indicators for the new tasks. • Describe feedback processes and formats. • Explain timelines and goals as well as their relevance to work allocated. • Explain the importance of quality and timely delivery of the product/service. • Explain the escalation matrix and its importance, especially in case of emergencies. • Explain various ways of time and cost management. • State the rules/regulations for maintaining health and safety at the workplace. • Explain the meaning of hazard, different types of health and safety hazards found in the workplace, risks and threats based on the nature of work. • Explain the relevant signage, warnings, labels or descriptions on equipment, etc. while carrying out work activities.	• Demonstrate how to record/document tasks completed as per the requirements within specific timelines. • Show how to analyse problems accurately and communicate different possible solutions to the problem. • Demonstrate how to report any identified breaches in health, safety, and security policies and procedures to the designated person. • Demonstrate the process of using safety materials such as goggles, gloves, earplugs, caps, ESD pins, covers, shoes, etc. • Demonstrate the process of handling heavy and hazardous materials with care, while maintaining appropriate posture. • Demonstrate the process of carrying out routine cleaning of tools, machines and equipment. • Demonstrate ways to optimise the use of electricity/energy in various tasks/activities/processes. • Demonstrate the process of performing periodic checks of the functioning of the equipment/machine and rectify wherever required. • Demonstrate ways to use electrical

• Describe the procedures to report breaches in health, safety and security. • Describe the organisation's procedures for different emergency situations and the importance of following the same. • Describe different methods of cleaning, disinfection, sterilisation, and sanitisation. • Explain the significance of personal hygiene practice including hand hygiene. • Explain the path of disease transmission. • Describe the correct method of donning and doffing of PPE. • Explain different ways of managing resources and material efficiently. • Explain common electrical problems and common practices of conserving electricity. • Explain categorisation of waste into dry, wet, recyclable, non-recyclable and items of single-use plastics and use of different colours of dustbins. • Describe the organisation's procedures for minimising waste. • Explain waste management and methods of waste disposal. • State common sources of pollution and ways to minimise it.	equipment and appliances properly • Demonstrate the process of disposing non-recyclable and hazardous waste as per recommended processes.
Classroom Aids:	
Training Kit (Trainer **G**uide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Relevant stationery, First Aid Kit and Equipment used in Medical Emergencies.	

Module 5: Process of interacting effectively with team members and customers

Mapped to TEL/N9102 v1.0

Terminal Outcomes:

- Explain the importance of interacting effectively with superiors, colleagues and customers.
- Explain the need of respecting differences of gender and ability.

Duration: 16:00	Duration: 24:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the organisation's policies on dress code, workplace timings, workplace behaviour, performance management, incentives, delivery standards, information security, etc. • Explain the organisation's hierarchy and escalation matrix • Explain the importance of effective and different means of communication and establishing good working relationships with colleagues and superiors. • Explain the importance of helping colleagues with problems, in order to meet quality and time standards as a team. • Describe different means and methods of communication. • State different types of information that colleagues might need and the importance of providing this information in an appropriate manner. • Describe the organization's policies and procedures for working with colleagues and superiors. • Explain the importance of understanding the consequences of gender based behaviour. • Describe gender based concepts, issues and legislation • State the organization standards and guidelines to be followed for PwD and knowledge about laws, acts and provisions defined for PwD by the	• Demonstrate ways to communicate professionally using different techniques such as face-to-face, telephonic and written means. • Demonstrate appropriate verbal and non-verbal communication while interacting with People with Disability (PwD).

statutory bodies and the right way to use them including various medical conditions associated with PwD • Explain the health and safety requirements at a workplace for PwD. • Describe the process of recruiting people for a particular job profile w.r.t PwD and gender. • Explain various government / private schemes and benefits available for PwD and information about various institutes working for PwD to enable in providing livelihood opportunities for PwD.	
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Personal Protective Equipment, Hygiene Equipment and Materials like Sanitizer, Soap, Mask, etc.	

Module 6: On-the-Job Training

Mapped to Cloud Computing – Jr. Analyst (TEL/Q6215 v1.0)

Mandatory Duration: 120:00	Recommended Duration: 00:00
Location: On-Site	

Terminal Outcomes

1. Explain various cloud computing tools and applications, such as data storage, servers, databases, networking, software, analytics, etc.
2. Explain different types of cloud computing models, i.e., public cloud, private cloud, and hybrid cloud.
3. Develop frontend, backend and integration test cases according to the test scenarios.
4. Prepare the requirement traceability matrix.
5. Prepare the test plan document, including the schedules.
6. Carry out various functional and non-functional tests for a software/ application.
7. Check the communication between all the layers of the software/ application, considering various scenarios and probabilities.
8. Analyze user stories and use cases/requirements for validity and feasibility.
9. Analyze software and systems to identify risks.
10. Identify, record, and document all bugs within the bug tracking software.
11. Determine the root cause for software/ application issues.
12. Carry out relevant documentation to report the test activities to the stakeholders.
13. Create schedules and rosters for the team to ensure they understand individual work requirements.
14. Carry out routine cleaning of tools, machines and equipment.

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Graduate	Science/Electronics/ Telecom/IT and other relevant domains	1	Active Networks/IoT Domain	0	NA	Eligible for ToT program

Trainer Certification	
Domain Certification	**Platform Certification**
Job Role "**Cloud Computing – Test Analyst**", "TEL/Q6215, v1.0", Minimum accepted score is 80%	Job Role: "**Trainer**", "MEP/Q2601 v1.0", Minimum Accepted score is 80%

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Graduate	Science/Electronics/ Telecom/IT and other relevant domains	1	Active Networks/IoT Domain	0	NA	Eligible for ToA program

Assessor Certification	
Domain Certification	**Platform Certification**
Job Role "**Cloud Computing – Test Analyst**", "TEL/Q6215, v1.0", Minimum accepted score is 80%	Job Role: "**Assessor**", "MEP/Q2701 v1.0", Minimum Accepted score is 80%

Assessment Strategy

1. Assessment System Overview:

- Batches assigned to the assessment agencies for conducting the assessment on SDSM/SIP oremail.
- Assessment agencies send the assessment confirmation to VTP/TC looping SSC.
- Assessment agency deploys the ToA certified Assessor for executing the assessment.
- SSC monitors the assessment process & records.

2. Testing Environment:

- Confirm that the centre is available at the same address as mentioned on SDMS or SIP.
- Check the duration of the training.
- Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
- If the batch size is more than 30, then there should be 2 Assessors.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
- Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
- Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
- Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:

- Question papers created by the Subject Matter Experts (SME).
- Question papers created by the SME verified by the other subject Matter Experts.
- Questions are mapped with NOS and PC.
- Question papers are prepared considering that level 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management.
- Assessor must be ToA certified & trainer must be ToT Certified.
- Assessment agency must follow the assessment guidelines to conduct the assessment.

4. Types of evidence or evidence-gathering protocol:

- Time-stamped & geotagged reporting of the assessor from assessment location.
- Center photographs with signboards and scheme-specific branding.
- Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period.
- Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos.

5. Method of verification or validation:

- Surprise visit to the assessment location.
- Random audit of the batch.
- Random audit of any candidate.

6. Method for assessment documentation, archiving, and access:

- Hard copies of the documents are stored.
- Soft copies of the documents & photographs of the assessment are uploaded/accessed from cloud Storage.
- Soft copies of the documents & photographs of the assessment are stored in the Hard Drives.

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	The key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on-site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on-site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
Terminal Outcome	The terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
NOS	National Occupational Standard (s)
NSQF	National Skills Qualifications Framework
OJT	On-the-job Training
QP	Qualifications Pack
PwD	People with Disability
PPE	Personal Protective Equipment