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

COMPETENCY BASED CURRICULUM

SOFTWARE TESTING ASSISTANT

(Duration: One Year)

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 4.5

SECTOR – IT & ITES

Directorate General of Training

SOFTWARE TESTING ASSISTANT

(Non-Engineering Trade)

(Revised in March 2023)

Version: 2.0

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL – 4.5

Developed By

Ministry of Skill Development and Entrepreneurship

Directorate General of Training

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1. COURSE INFORMATION

During the one-year duration of Software Testing Assistant trade a candidate is trained on professional skill, professional knowledge and Employability skill related to job role. In addition to this a candidate is entrusted to undertake project work and extra-curricular activities to build up confidence. The broad components covered under Professional Skill subject are as below:-

The trainee learns to practice with Operating Systems (Windows, Linux) and with all the system applications. Practice with all the functions of Word Processing and Spreadsheet Software. Create customized database files using Microsoft Access. Configure network connection and browsing Internet. Design web pages using HTML programming and WYSIWYG web design tools. Implement Information Security, Security Threats, Security Vulnerabilities and Risk Management. Design and develop web pages using JavaScript programming. At the end of this year trainees can go on industrial visit or projects specified in the syllabus.

The trainee learns to Perform Software Testing using different techniques. Implement Quality Methods in Software Testing. Apply manual testing techniques in Software Testing. Perform automatic test execution using Windows automated software testing tool Win Runner. Perform automatic test execution using Windows automated software testing tool Load Runner.Perform automatic test execution using Web automated software testing tool Selenium IDE. At the end of year the trainees can go on industrial visit or projects specified in the syllabus.

2. TRAINING SYSTEM

2.1 GENERAL

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

'Software Testing Assistant' trade under CTS is one of the most popular course delivered nationwide through network of ITIs. The course is of one year duration. It mainly consists of Domain area and Core area. The Domain area (Trade Theory & Practical) imparts professional skills and knowledge, while Core area (Employability Skills) imparts requisite core skill, knowledge and life skills. After passing out the training program, the trainee is awarded National Trade Certificate (NTC) by DGT which is recognized worldwide.

Trainees need to demonstrate broadly that they are able to:

- Read and interpret technical parameters / documentation, plan and organize work processes, identify necessary materials and tools;
- Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations.
- Apply professional knowledge& employability skills while performing the job and modification& maintenance work.
- Check the system specification and application software as per requirement of the design of job.
- Document the technical parameter related to the task undertaken.

2.2 PROGRESSION PATHWAYS

- Can join industry as Technician and will progress further as Senior Technician, Supervisor and can rise up to the level of Manager.
- Can become Entrepreneur in the related field.
- Can join Apprenticeship programme in different types of industries leading to National Apprenticeship certificate (NAC).
- Can join Crafts Instructor Training Scheme (CITS) in the trade for becoming an instructor in ITIs.
- Can join Advanced Diploma (Vocational) courses under DGT as applicable.

2.3 COURSE STRUCTURE

Table below depicts the distribution of training hours across various course elements during a period of one year: -

S No.	Course Element	Notional Training Hours
1.	Professional Skill (Trade Practical)	840
2.	Professional Knowledge (Trade Theory)	240
3.	Employability Skills	120
	Total	**1200**

Every year 150 hours of mandatory OJT (On the Job Training) at nearby industry, wherever not available then group project is mandatory.

On the Job Training (OJT)/ Group Project	150
Optional Courses (10th/ 12th class certificate along with ITI certification or add on short term courses)	240

Trainees of one-year or two-year trade can also opt for optional courses of up to 240 hours in each year for 10th/ 12th class certificate along with ITI certification, or, add on short term courses

2.4 ASSESSMENT & CERTIFICATION

The trainee will be tested for his skill, knowledge and attitude during the period of the course and at the end of the training program as notified by the DGT from time to time. The employability skills will be tested in the first year itself.

a) The Continuous Assessment (Internal) during the period of training will be done by **Formative Assessment Method** by testing for assessment criteria listed against learning outcomes. The training institute has to maintain an individual trainee portfolio as detailed in assessment guideline. The marks of internal assessment will be as per the formative assessment template provided on www.bharatskills.gov.in

b) The final assessment will be in the form of summative assessment. The All India Trade Test for awarding NTC will be conducted by Controller of examinations, DGT as per the guidelines. The pattern and marking structure is being notified by DGT from time to time. **The learning outcome and assessment criteria will be the basis for setting question papers for final assessment. The examiner during final examination will also check** the individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

2.4.1 PASS REGULATION

For the purposes of determining the overall result, weightage of 100% is applied for six months and one year duration courses and 50% weightage is applied to each examination for two years courses. The minimum pass percent for Trade Practical and Formative assessment is 60% & for all other subjects is 33%.

2.4.2 ASSESSMENT GUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking the assessment. Due consideration should be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scrap/waste as per procedure, behavioral attitude, sensitivity to the environment and regularity in training. The sensitivity towards OSHE and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based comprising some of the following:

- Job carried out in labs/workshop
- Record book/ daily diary
- Answer sheet of assessment
- Viva-voce
- Progress chart
- Attendance and punctuality
- Assignment
- Project work
- Computer based multiple choice question examination
- Practical Examination

Evidences and records of internal (Formative) assessments are to be preserved until forthcoming examination for audit and verification by examining body. The following marking pattern to be adopted for formative assessment:

Performance Level	Evidence
(a) Marks in the range of 60%-75% to be allotted during assessment	

For performance in this grade, the candidate should produce work which demonstrates attainment of an acceptable standard of craftsmanship with occasional guidance, and due regard for safety procedures and practices	• Demonstration of good skills and accuracy in the field of work/ assignments. • A fairly good level of neatness and consistency to accomplish job activities. • Occasional support in completing the task/ job.
(b) Marks in the range of 75%-90% to be allotted during assessment	
For this grade, a candidate should produce work which demonstrates attainment of a reasonable standard of craftsmanship, with little guidance, and regard for safety procedures and practices	• Good skill levels and accuracy in the field of work/ assignments. • A good level of neatness and consistency to accomplish job activities. • Little support in completing the task/ job.
(c) Marks in the range of more than 90% to be allotted during assessment	
For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.	• High skill levels and accuracy in the field of work/ assignments. • A high level of neatness and consistency to accomplish job activities. • Minimal or no support in completing the task/ job.

3. JOB ROLE

Test Engineer-Software Products; are responsible for development and co-ordination of scheduled and unscheduled test plans and conducting software compatibility tests with programs, hardware, operating systems, or network environments. The job involves documenting, reporting and tracking software defects using manual testing software.

Test Engineer-IT Services; is responsible for development and co-ordination of scheduled and unscheduled test plans and conducting software compatibility tests with programs, hardware, operating systems, or network environments. The job involves documenting, reporting and tracking software defects using manual testing software.

Reference NCO-2015:

a) 2519.0402 – Test Engineer-Software Products
b) 2519.0302 – Test Engineer-IT Services

Reference NOS:

a) SSC/N3022
b) SSC/N0909
c) SSC/N0901
d) SSC/N1301
e) SSC/N1302
f) SSC/N1303

4. GENERAL INFORMATION

Name of the Trade	**SOFTWARE TESTING ASSISTANT**
Trade Code	DGT/1119
NCO - 2015	2519.0402, 2519.0302
NSQF Level	Level – 4.5
NOS Covered	SSC/N3022, SSC/N0909, SSC/N0901, SSC/N1301, SSC/N1302, SSC/N1303
Duration of Craftsmen Training	One Year (1200 Hours + 150 Hours OJT/Group Project)
Entry Qualification	Passed 12th class examination with Science and Mathematics or with vocational subject in same sector or its equivalent.
Minimum Age	14 years as on first day of academic session.
Eligibility for PwD	LD, CP, LC, DW, LV, AA
Unit Strength (No. Of Student)	24 (There is no separate provision of supernumerary seats)
Space Norms	70 Sq. m
Power Norms	3.45 KW
Instructors Qualification for	
1. Software Testing Assistant	B.Voc/Degree in Engineering in Computer Science/ IT, MCA from AICTE/UGC recognized University with one year experience in relevant field. **OR** Diploma (Minimum 2 years) in Computer Science/ IT, BCA, NIELIT A Level from recognized Board of education or relevant Advanced Diploma (Vocational) from DGT with two years experiences in relevant field. **OR** NTC/ NAC passed in Software Testing Assistant trade with Three years experiences in relevant field. **Essential Qualification:** Relevant Regular / RPL variants of National Craft Instructor Certificate (NCIC) under DGT. ***NOTE*:** Out of two Instructors required for the unit of 2 (1+1), one must have Degree/ Diploma and other must have NTC/ NAC qualifications. *However, both of them must possess NCIC in any of its variants.*
2. Employability Skill	MBA/ BBA / Any Graduate/ Diploma in any discipline with Two years' experience with short term ToT Course in Employability

	Skills. (Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above) OR Existing Social Studies Instructors in ITIs with short term ToT Course in Employability Skills.
3. Minimum Age for Instructor	21 Years
List of Tools & Equipment	As per Annexure-I

5. LEARNING OUTCOME

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

5.1 LEARNING OUTCOMES:

1. Work with Operating Systems (Windows, Linux) and with all the system applications following safety precautions. (NOS:SSC/N3022)
2. Explore all the functions of Word Processing and Spreadsheet Software. (NOS:SSC/N3022)
3. Plan and create customized database files using Microsoft Access. (NOS:SSC/N0322)
4. Configure network connection for browsing Internet. (NOS:SSC/N3022)
5. Design web pages using HTML programming and WYSIWYG web design tools. (NOS: SSC/N1301)
6. Implement Information Security, Security Threats, Security Vulnerabilities and Risk Management. (NOS:SSC/N0909, SSC/N0901)
7. Design and develop web pages using JavaScript programming. (NOS:SSC/N1302)
8. Perform Software Testing using different techniques. (NOS:SSC/N1302)
9. Implement Quality Methods in Software Testing. (NOS:SSC/N1301, SSC/N1302, SSC/N1303)
10. Apply manual testing techniques in Software Testing. (NOS: SSC/N1303)
11. Perform automatic test execution using Windows automated software testing tool WinRunner. (NOS:SSC/N1302)
12. Perform automatic test execution using Windows automated software testing tool LoadRunner. (NOS:SSC/N1302)
13. Perform automatic test execution using Web automated software testing tool Selenium IDE.(NOS:SSC/N1302)

6. ASSESSMENT CRITERIA

LEARNING OUTCOMES	ASSESSMENT CRITERIA
1. Work with Operating Systems (Windows, Linux) and with all the system applications following safety precautions. (NOS:SSC/N3022)	Working with Windows Explorer, Managing Folders and Files, Copying and Moving Files and Folders.
	Using Common Tools and Programs, Customizing the Windows 7 Desktop, start menu, using the removable drives, Compressing files.
	Working with Window Accessories Calculator, Paint and Snipping Tool.
	Working with Linux OS.
2. Explore all the functions of Word Processing and Spreadsheet Software. (NOS:SSC/N3022)	Document Basics, creating a New Document, Saving, Editing and Formatting Documents.
	Using the commands in the Home, Insert, Design, Page Layout, Mailings, and View Menus.
	Create Excel Sheets for various entries like Marks, Salary and Sales etc.
	Sort and Filter Data. Validate data.
	Create data tables, Pivot tables and charts.
3. Plan and create customized database files using Microsoft Access. (NOS: SSC/N0322	Create Tables.
	Create Queries.
	Create Relationships.
	Create Reports.
4. Configure network connection for browsing Internet. (NOS:SSC/N3022)	Connecting a computer to a network.
	Sharing of Devices, Files and Folders.
	Internet, Email, Setting up video conferencing.
5. Design web pages using HTML programmingand WYSIWYG web design tools. (NOS: SSC/N1301)	Designing simple web pages with text, pictures, tables, lists, hyperlinks, frames, marquees etc. using HTML tags.
	Using a WYSIWYG web design tool to design and edit web pages. With various styles.
6. Implement Information Security, Security Threats, Security Vulnerabilities and Risk Management. (NOS:SSC/N0909, SSC/N0901)	Practice on Information Security.
	Practice on Security Threats.
	Practice on Security Vulnerabilities. Practice on Risk Management.

7. Design and develop web pages using JavaScript programming. (NOS: SSC/N1302)	Describe variables and literals.
	List the operators supported by JavaScript.
	Use Regular Expressions.
	Create applications using JavaScript statements.
	Create user-defined functions.
	Use JavaScript objects.
	Create event handlers in JavaScript.
8. Perform Software Testing using different techniques. (NOS: SSC/N1302)	Criticality of requirement, special tests –complexity.
	Security, recovery, installation, error handling.
	Smoke, sanity, parallel and execution testing.
9. Implement Quality Methods in Software Testing. (NOS: SSC/N1301, SSC/N1302, SSC/N1303)	Seiton: Set in Order.
	Seiso: Spic & Span (Shine).
	Shitsuke: Self Discipline (Sustain).
10. Apply manual testing techniques in Software Testing. (NOS: SSC/N1303)	Unit Testing.
	Alpha & Beta Testing.
	White Box Testing.
	Black Box Testing.
	Performance Testing.
11. Perform automatic test execution using Windows automated software testing tool WinRunner. (NOS:SSC/N1302)	Exploring the WinRunner Window.
	Spying on GUI map mode.
	Using the Rapid Test script wizard.
	Recording a context sensitive test.
	Recording in analogy mode.
	Changing the synchronization setting.
	Running the synchronized test.
	Adding bitmap checkpoints to a test script.
	Running the test on a new version.
	Using the function generator to insert functions.
	Debugging the test script.
	Converting your test to a data driven test.
	Adjusting the script with regular information.
	Reading text from an application.
	Teaching fonts to win runner.
	Programming a batch test.
	Analysing the batch test results.
	Editing object descriptions in the GUI map adding GUI objects to the

	GUI map.
	Updating the GUI map with the run wizard.
12. Perform automatic test execution using Windows automated software testing tool LoadRunner. (NOS:SSC/N1302)	The LoadRunner controller at a glance.
	Configuring a scenario.
	Configuring a host.
	Managing scenarios using test director.
	Runtime and transaction online monitors.
	Web performance monitors.
	Exporting analysis data.
	Analysing scenario performance.
13. Perform automatic test execution using Web automated software testing tool Selenium IDE. (NOS:SSC/N1302)	Installing the IDE.
	Menu Bar, Toolbar, Case Pane.
	Building Test Cases.
	Editing, Insert Command, Table View.
	Table View, Source View, Opening and Saving a Test Case.
	Selenium Commands -"Selenese".
	Commonly used Selenium Commands.
	Verify text present, verify element present.
	Location by Identifier, Location by Id.
	Location by DOM, Location by CSS.
	Globbing Patterns, Regular Expression Patterns, Exact Patterns.
	The wait for Commands in AJAX applications.
	JavaScript Usages with Script Parameters
	Alert, Popups and Multiple Windows.
	Stepping Through a Test case.
	Executing Selenium-IDE Tests on Different Browsers.

7. TRADE SYLLABUS

SYLLABUS FOR SOFTWARE TESTING ASSISTANT			
DURATION – ONE YEAR			
Duration	**Reference Learning Outcome**	**Professional Skills (Trade Practical)**	**Professional Knowledge (Trade Theory)**
Professional Skill 70 Hrs.; Professional Knowledge 18 Hrs.	Work with Operating Systems (Windows, Linux) and with all the system applications Following safety precautions.	***Windows*** 1. Working with Windows Operating System. 2. Working with Windows Explorer, Managing Folders and Files, Copying and Moving Files and Folders. 3. Using Common Tools and Programs, Customizing the Windows 7 Desktop, start menu, using the removable drives, Compressing files. 4. Working with Window Accessories Calculator, Paint and Snipping Tool. 5. Viewing the properties of the computer and the hardware installed.	***Computer Fundamentals*** • History & Generations of Computers. Types of Computers. • Advantages, disadvantages and Applications ofComputers. • Hardware and Software Concepts, Introduction to the functions of an Operating System.Popular Operatingsystems in use. • Features of Windows OS. Features of the various types of Input and Output Devices in Use, Using Scanner and Printer.
		Linux 6. Working with Linux OS. 7. Using Basic commands like ls, mkdir, rm, mv, cp, who am i, who, grep. 8. Using vi editor.	***Linux*** • Introduction to Linux Operating System and its structure. • Files and Processes in Linux. • Directory structure of Linux O.S. • Advantages of Linux Operating System. • Various Linux Shells. • Basic Linux commands.

Professional Skill 120 Hrs.; Professional Knowledge 30Hrs.	Explore all the functions of Word Processing and Spreadsheet Software.	***Word Processing Software*** 9. Document Basics,creating a NewDocument, Saving, Editing and Formatting Documents. 10. Using the commands in the Home, Insert,Design, Page Layout, Mailings, and ViewMenus. 11. Creating documents with various objects and formatting objects.	***Introduction to Office*** • MS Word Fundamentals Introduction to the MS Word Screen, Ribbons, Microsoft Office Button and Quick Access Toolbar. • Using Keyboard Commands andContextual Menus. UsingWord Help.
		Spreadsheet 12. Create, open, edit and format workbooks. 13. Create Excel Sheets for various situations like Marks, Salary and Sales etc. 14. Using Functions of various categories. Relative and Absolute Cell Referencing. 15. Sort and Filter Data. Validate data. 16. Create Macros. Import Data from different sources. 17. Create data tables, Pivot tables and charts. 18. Excel Sheet Page Set up and Printing Techniques.	***Spreadsheet*** • Introduction to MS Excel. • Introduction to Data Types and Cellreferencing. • Use of functions of various categories. • Linking Sheets.
Professional Skill 30 Hrs.; Professional Knowledge 12 Hrs.	Plan and create customized database files using Microsoft Access.	***Database - Access*** 19. Create Tables. 20. Queries. 21. Relationships. 22. Reports. 23. Macros and Forms.	***Database - Access*** • Concepts of Data, Information and Databases. • Overview of popular databases, RDBMS, OODB and NOSQL. • Rules for designing good tables. Integrity rules and constraints in a table. • Relationships in tables. Introduction to MS Access Database. • Create Tables, Queries,

			Relationships, Reports, Macros and Forms.
Professional Skill 15 Hrs.; Professional Knowledge 06 Hrs.	Configure network connection for browsing Internet.	***Computer Network*** 24. Viewing Network connections. 25. Connecting a computer to a network. 26. Sharing of Devices, Files and Folders. 27. Using the ping command. 28. Internet, Email, Setting up video conferencing.	***Introduction to Computer Networks*** • Necessity and Advantages of networking. • Client Server and peer to Peer networkingconcepts. • Network topologies. • Introduction to LAN, WAN and MAN. • Network components, viz. Modem, Hub, Switch, Router, Bridge, Gateway etc.
Professional Skill 60 Hrs.; Professional Knowledge 18 Hrs.	Design web pages using HTML programming and WYSIWYG web design tools.	***Web Page Design (Designing Static Web Pages)*** 29. Designing simple web pages with text, pictures, tables, lists, hyperlinks, frames, marquees etc. using HTML tags. 30. Designing Web Pages with Forms and Form Controls using HTML tags. 31. Using a WYSIWYG web design tool to design and edit web pages. With various styles.	***Web Design Concepts*** • Concepts of Static and Dynamic Web pages. • Introduction to HTML and various • Tags in HTML. • Creating Forms with controls using HTML. • Concepts of CSS.
Professional Skill 20 Hrs.; Professional Knowledge 06 Hrs.	Implement Information Security, Security Threats, Security Vulnerabilities and Risk Management.	***Overview of Security threats*** 32. Practice on Security Threats. ***Information Security*** 33. Practice on Information Security. ***Information Security Vulnerabilities*** 34. Practice on Security Vulnerabilities. ***Risk Management*** 35. Practice on Risk Management.	***Overview of Information Security*** • Understanding Information Security – Need of the Information security, Basics of IS (CIA). • History and evolution of IS, Dimensions of Security, Intranet/Internet, Information Security and Cyber Security relationship. • Why Care About Security? - Challenges to Information Security, Benefits of Information of

			Security. • Understanding techniques to enforce IS in an organization, Identifying tools to enforce Information Security, Identifying frameworks to Enforce Information Security. ***Overview of Security threats*** • Overview of Information Security Threats, Types of threats. • Best Practices or Guidelines used to Identify Threats. • Maintaining Systems and Procedures. ***Information Security Vulnerabilities*** • Why do Information Security Vulnerabilities exists - Types of Technical Vulnerabilities. • Flaws in Software or Protocol Designs. • Weaknesses in How Protocols and Software Are Implemented. • Weaknesses in System and Network Configurations, Weaknesses in Web or Cloud applications. • Identifying role of Social sites and media in cyber security and vulnerability. ***Risk Management*** • What is Risk? Relationship between Threat, Vulnerability, and Risk. • Risk Assessment (Phases), Why Is Risk Assessment Difficult? • Types of Risk Assessment, Best Practices and

			Guidelines in Assessing and Calculating Risks.
Professional Skill 100 Hrs.; Professional Knowledge 24 Hrs.	Design and develop web pages using JavaScript programming.	***Variables, Data Types and Operators:*** 36. Describe variables and literals. 37. List the data types supported by JavaScript. 38. List the operators supported by JavaScript. 39. Describe expressions. 40. Use Regular Expressions. 41. Use Arrays. *JavaScript Statements:* 42. Createapplications using JavaScript statements. 43. Use conditional and loop statements to control the application. 44. Createuser-defined functions. *Using Objects:* 45. Use Browser objects. 46. Use JavaScript objects. 47. Use HTML input elements. ***Handling Events:*** 48. Explain Events objects. 49. List common events. 50. Create event handlers in JavaScript.	***JavaScript*** • Introduction to JavaScript. • Describe JavaScript. • Differentiate between Client- Side and Server - Side Application. • Differentiate between JavaScript and Java. • Integrate JavaScript in HTML. • Variables, data Types and Operators. • JavaScript Statements. • Using Objects. • Handling Events.
Professional Skill 20 Hrs.; Professional Knowledge 06 Hrs.	Perform Software Testing using different techniques.	***Testing Techniques*** 51. Criticality of requirement, special tests –complexity. 52. GUI, compatibility. 53. Security, recovery, installation, error handling. 54. Smoke, sanity, parallel and execution testing.	***Introduction to Software Testing Quality Control (STQC)*** • Definition, approaches. • Testing during development life cycle. • Test policy. • Test planning. • Categories of defect. • Configuration management • Risk analysis.
Professional Skill 20 Hrs.; Professional	Implement Quality Methods in Software Testing.	***Quality Methods (implement in test cases)*** 55. Seiri: Sort. 56. Seiton: Set in Order.	***Introduction to 5S and Keizen module*** • Seiri: **Sort** Sort through and sort out

Knowledge 06 Hrs.		57. Seiso: Spic & Span (Shine). 58. Seiketsu: Standardize. 59. Shitsuke: Self Discipline (Sustain).	junk, seldom-used items and necessary items. • Seiton: **Set in Order** Physically mark a place for everything and keep everything in its place. • Seiso: **Spic & Span (Shine)** Keep workplace & machine spic & span while at the same time inspect for abnormalities, if any. • Seiketsu: **Standardize** Define and standardize work processes, 5S activities and tasks. • Shitsuke: **Self Discipline (Sustain)** Make 5S a way of life, one should train everybody in the organization so that doing 5S becomes self discipline.
Professional Skill 85 Hrs.; Professional Knowledge 24 Hrs.	Apply manual testing techniques in Software Testing.	***Manual Testing*** 60. Unit Testing. 61. Alpha & Beta Testing. 62. Regression Vs Retesting. 63. White Box Testing. 64. Black Box Testing. (06 hrs. 65. White Box V/s Black Box. 66. Verification & Validation. 67. Acceptance Testing. 68. Non-Functional Testing. 69. Usability Testing. 70. Stress Testing. 71. Load Testing. 72. Performance Testing. 73. Diff. b/w above 3.	***Objectives and Principles of Testing*** • Test Management. • Testing Models. • Test Strategy. • Testing Life Cycle. • Testing Methodologies. • Facts and Myth. • Verification and validation of Testing

Professional Skill 70 Hrs.; Professional Knowledge 24 Hrs.	Perform automatic test execution using Windows automated software testing tool WinRunner.	***Introducing WinRunner (Windows Automated Testing Tool)*** 74. The Benefits of Automated testing. 75. Understanding the testing process. 76. Exploring the WinRunner Window. ***Setting Up the GUI Map*** 77. How does Win Runneridentify GUI objects. 78. Spying on GUI map mode. 79. Choosing a GUI map mode. 80. Using the Rapid Test script wizard. ***Recording Tests*** 81. Choosing a record mode. 82. Recording a context sensitive test. 83. Understanding the text script. 84. Recording in analogy mode. 85. Running the test. 86. Analysing test results. 87. Recording tips. ***Synchronizing Tests*** 88. When should you	***Automating Test Execution*** • Testing and test automation. • The V model. • Tool support for life-cycle testing. • The promise of test automation, Common problems of test automation. • The limitations of automating software testing, Script Preprocessing, Scripting Techniques.
Professional Skill 100 Hrs.; Professional Knowledge 30 Hrs.	Perform automatic test execution using Windows automated software testing tool LoadRunner.	***LoadRunner (Windows Automated Testing Tool)*** 126. Load test planning. 127. The LoadRunner controller at a glance. 128. Creating a scenario. 129. Using rendezvous points. 130. Configuring a scenario. 131. Configuring a host. 132. Preparing to run a scenario. 133. Managing scenarios using test director. 134. Running a scenario. 135. Online monitoring. 136. Runtime and transaction online monitors.	***Tools to Automate Testing*** • Selecting tools. • Requirements. • Tool market. • Tool selection project. • Team. • Identifying requirements. • Identifying constraints. • Identifying tools. • Availability in market. • Evaluating the candidate tools.

		137. Resource monitoring. 138. Web performance monitors. 139. Network monitoring. 140. Understanding load runner analysis. 141. Exporting analysis data. 142. Analysing scenario activity. 143. Analysing scenario performance. 144. Cross scenario analysis. 145. Web user graphs.	
Professional Skill 130 Hrs.; Professional Knowledge 36 Hrs.	Perform automatic test execution using Web automated software testing tool Selenium IDE.	***(Web Automated Testing Tool) Selenium-IDE*** 146. Installing the IDE. 147. Opening the IDE. 148. IDE Features. 149. Menu Bar, Toolbar, Case Pane. 150. Log/ Reference/ UI-Element Rollup Pane. 151. Log, Reference, I-Element and Rollup. 152. Building Test Cases. 153. Recording. 154. Adding Verifications and Asserts With the Context Menu. 155. Editing, Insert Command, Table View. 156. Source View, Insert Comment, Table View, Source View, Edit a Command or Comment. 157. Table View, Source View, Opening and Saving a Test Case. 158. Running Test Cases. 159. Using Base URL to Run Test Cases in Different Domains. 160. Selenium Commands - "Selenese". 161. Script Syntax. 162. Test Suites. 163. Commonly used Selenium	***Automated Comparison*** • Verification. • Comparison, automation. • Comparators, dynamic comparison. • Post execution comparison. • Simple comparison, complex. • Comparison. • Test sensitivity. • Comparing different types of outcomes. • Comparison filters and guidelines. • Test ware Architecture. • Automating pre and post • Processing. • Building maintainable tests. • Introduction to Robotic process automation (RPA) and related tools.

		Commands. 164. Verifying page Elements. 165. Assertion or Verification? 166. Verify text present, verify element present. 167. Verify text. 168. Location Elements. 169. Location by Identifier, Location by Id. 170. Location by name, location by X-path. 171. Location Hyperlinks by Link text. 172. Location by DOM, Location by CSS. 173. Implicit Locators. 174. Matching Text Patterns. 175. Globbing Patterns, Regular Expression Patterns, Exact Patterns. 176. The "And Wait" Commands. 177. The wait For Commands in AJAX applications. 178. Sequence of Evaluation and Flow Control. 179. Store Commands and Selenium Variables. 180. Store Element Present, store text, Store Eval. 181. JavaScript and Selenese Parameters. 182. JavaScript Usages with Script Parameters. 183. JavaScript Usage with Non-Script Parameters. 184. echo-The Selenese Print Commands. 185. Alert, Popups and Multiple Windows. 186. Alerts, Confirmations. 187. Debugging. 188. Breakpoint and Start points. 189. Stepping Through a Test case.	

		190. Find Button. 191. Page Source for Debugging. 192. Locator Assistance. 193. Writing a Test Suite. 194. User Extensions. 195. Format. 196. Executing Selenium-IDE Tests on Different Browsers. 197. Troubleshooting.	

SYLLABUS FOR CORE SKILLS

1. Employability Skills (Common for all trades) (120 Hrs.)

Learning outcomes, assessment criteria, syllabus and Tool List of Core Skills subjects which is common for a group of trades, provided separately in www.bharatskills.gov.in /dgt.gov.in

ANNEXURE-I

LIST OF TOOLS & EQUIPMENT			
SOFTWARE TESTING ASSISTANT (For a batch of 24 trainees)			
S No.	**Name of the Tools and Equipment**	**Specification**	**Quantity**
A. Tools/ Equipment			
1.	Desktop Computer	CPU: 32/64 Bit i3/i5/i7 or latest processor, Speed: 3 GHz or Higher. RAM:-4 GB DDR-III or Higher, Wi-Fi Enabled. Network Card: Integrated Gigabit Ethernet, with USB Mouse, USB Keyboard and Monitor (Min. 17 Inch.) Licensed Operating System and Antivirus compatible with trade related software.	12 Nos.
2.	Laptop	4th Gen Ci5 Processor, 4GB RAM, 1TB Hard Disk, Win8 Preloaded Licensed OS, 2GB Graphics Card, DVD Writer, Standard Ports and Connectors.	1 No.
3.	Switch with Wireless Connectivity	24 Port	1 No.
4.	Lab should have Structured cabling (to enable both Wired and Wireless Networks Practicals)		As required
5.	Internet or Intranet Connectivity		As required
6.	Laser Printer		1 No.
7.	Network Monochrome Laser Printer		1 No.
8.	Optical Scanner (Desk Top Type)		1 No.
9.	Web Cam (Digital Camera)		1 No.
11.	LCD Projector with Wireless connectivity.		1 No.
12.	Online UPS		As required
13.	Standalone Hard Disks		5 Nos.
14.	Network Rack		2 Nos.
15.	LAN Setup		As required
B. Software			
16.	MS Office	2010 (professional) or the latest version	Multiuser

		available at the time of procurement	
18.	Open Office or equivalent.		Open source software
19.	Testing Tools -win runner and load runner (windows based) selenium(web-based) open source		Multiuser(Academic version)
C. LIST OF OTHER ITEMS/ FURNITURE			
20.	Vacuum cleaner		1 No.
21.	Pigeon hole cabinet	20 compartments	1 No.
22.	Chair and table for the instructor		01 each (for class room & laboratory)
23.	Dual Desk or Chair and Tables for Trainees		12 / 24 Nos.
24.	Computer table laminated top	150x650x750 mm with sliding tray for key board and one shelf of storage	12 Nos.
25.	Operators chair	without arms mounted on castor wheels, adjustable height	24 Nos.
28.	Air		As required.
	conditioners		
29.	Storage cabinet	60x700x450mm	1 No.
30.	White Board.		1 No.
31.	Steel Almirah		1 No.
D. Raw Materials for a batch of 24 trainees			
33.	White Board Marker		As required
38.	Cartridges for printer		As required
39.	RJ 45 Jack		200 Pcs.
40.	Optical Mouse	(USB/PS2)	As required
41.	Key Board	(USB/PS2)	As required
50.	Pen drives	16 GB	2 Nos.

ANNEXURE-II

The DGT sincerely acknowledges contributions of the Industries, State Directorates, Trade Experts, Domain Experts, trainers of ITIs, NSTIs, faculties from universities and all others who contributed in revising the curriculum.

Special acknowledgement is extended by DGT to the following expert members who had contributed immensely in this curriculum.

MEMBERS OF SECTOR MENTOR COUNCIL			
S No.	**Name of the member with Post (Shri /Smt/Ms)**	**Organisation**	**Position in SMC**
1.	Dr. Sanjeev Kumar Gupta, Head, Technical Wing	National Institute of Electronics and Information Technology, Electronics Niketan, 6, CGO Complex, New Delhi 110 003	Chairman
2.	R Chandrasekaran, Chief Executive, Technology & Operations	Cognizant Technology Solutions India Pvt. Ltd., 12th & 13th Floor, "A" wing, Kensington Building Hiranandani Business Park, Powai, Mumbai - 400 076	Member
3.	Srikantan Moorthy, SVP & Head, Education & Research	Infosys Electronics City, Hosur Road, Bangalore 560 100	Member
4.	Deepak Jain, Senior VP & Global Head-Work Force Planning	WIPRO, Doddakannelli, Sarjapur Road, Bangalore - 560 035	Member
5.	K. Ganesan Vice President -Global Head Talent Acquisition Group TCS House, Raveline street Fort, Mumbai - 400 001	TCS, TCS House, Raveline street, Fort, Mumbai - 400 001	Member
6.	Avinsh Vashishta, Chairman & GU Managing Director	Accenture Services Pvt. Ltd., 71, Cunningham Road, Bangalore – 560052	Member
7.	Ravi Shankar B.	Mindtree Ltd, Global Village, RCVE Post, Mysore Road, Bangalore 59	Member
8.	Mr. Umesh Gupta, Network of ICT Entrepreneurs and Enterprises	USO House, USO Road, 6 Special Institutional Area, New Delhi-110067	Member
9.	Prof. S.C. De Sarkar,	Indian Institute of Technology Bhubaneswar, Bhubaneswar-751 013	Member
10.	Dr. Arti Kashyup, Associate Professor	Academic Block, Indian Institute of Technology Mandi, PWD Rest House, Near Bus Stand, Mandi - 175 001, Himachal Pradesh	Member

11.	Dr. B. Mahanty, Professor	Indian Institute of Technology Kharagpur, Kharagpur, India - 721302	Member
12.	Dr. Narayanaswamy N S, Associate Professor	D/o Computer Science and Engg Indian Institute of Technology Madras IIT P.O., Chennai 600 036	Member
13.	Ms. Koushalya Barik,AD (VE)	National Institute of Open Schooling, Noida	Member
14.	Prof. Ashis.K. Pani, Professor, XLRI Jamshedpur	XLRI Jamshedpur	Member
15.	Shri S.K. Prasad	National Institute of Open Schooling, Noida	Member
16.	P N Nayak, Head - Organizational Training	HCL Services Ltd., (A subsidiary of HCL INFOSYSTEMS LTD.), Hyderabad Campus, Road No 2, Hardware Technology Park, Kancha Imarat, Pahadi Shareef, Hyderabad – 500005	Member
17.	Hemant Darbadi, Ex. Director	CDAC, Pune University Campus, Pune-411007	Member
18.	Arnab Bhattacharya, Associate Professor	Department of Computer Science and Engineering, IIT, Kanpur	Member
19.	Ms. Sheetal Chopra, Dy. Director	NIELIT,Delhi, 2nd Floor Parshwanath Mero Mall, Indralok Metro Station, New Delhi	Member
20.	Dr Vijayarajeswaran, Managing Director	VI Micro Systems Pvt. Ltd, Chennai	Member
21.	Pramod Tripathi, SEO	National Institute of Open Schooling, Noida	Member
22.	Shri Naresh Chandra, Jt. Director, DGT, HQ	DGT, New Delhi	Mentor
23.	B.K. Singha, DDT	CSTARI, Kolkata	Representative of CSTARI
24.	Shri Sundar Rajan, DPA Gr. B	NIMI, Chennai	Representative of NIMI
25.	Dr. M. Jayprakasan, DDT	ATI, Chennai	Champion Master Trainer
26.	V. Babu, DDT	DGT, New Delhi	Member
27.	K. Singh, DDT	ATI, Ludhiana	Member
28.	Annapurna, TO	ATI Hyderabad	Member
29.	S.K. Acharya, VI (DTP)	NVTI, NOIDA	Member
30.	B.Biswas, TO	RDAT Kolkata	Member
31.	Sanjay Kr. Gupta, VI –COPA	RVTI Vadodara	Member

32.	Kunal Shanti Priya, VI	ITI, Daltonganj, Jharkhand	Member
33.	Anwar Muhammed, VI	RVTI, Trivendrum	Member
34.	Sunil. M.K. TO	CTI, Chennai	Member
35.	Narmada, VI	RVTI, Bangalore	Member
36.	Rohit Sama, ATO	ITI Shantinagar, Hyderabad	Member
37.	J. Herman, Assistant Training Officer	Govt. ITI (W), Nagarkoil, TN	Member
38.	P. Parthiban, Assistant Training Officer (ITESM)	Govt ITI(W),Salem, TN	Member
39.	S. Raja, ADT	DET, Telangana	Member
40.	Mohd. Akram,	ITI, Shanthi Nagar, Hyderabad	Member
41.	Geeta Sikhen , VI	RVTI, Panipat	Member

ABBREVIATIONS:

CTS	Craftsmen Training Scheme
ATS	Apprenticeship Training Scheme
CITS	Craft Instructor Training Scheme
DGT	Directorate General of Training
MSDE	Ministry of Skill Development and Entrepreneurship
NTC	National Trade Certificate
NAC	National Apprenticeship Certificate
NCIC	National Craft Instructor Certificate
LD	Locomotor Disability
CP	Cerebral Palsy
MD	Multiple Disabilities
LV	Low Vision
HH	Hard of Hearing
ID	Intellectual Disabilities
LC	Leprosy Cured
SLD	Specific Learning Disabilities
DW	Dwarfism
MI	Mental Illness
AA	Acid Attack
PwD	Person with disabilities


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