



## QUALIFICATION FILE

### IT Software Solutions for Business

- Short Term Training (STT)  Long Term Training (LT)  Apprenticeship
- Upskilling  Dual/Flexi Qualification  For ToT
- For ToA
- General  Multi-skill (MS)  Cross Sectoral (CS)  Future Skills  OEM

NCrF/NSQF Level: 4.5

Submitted By: Namrata Kapur

IT-ITeS Sector Skills Council NASSCOM (SSC NASSCOM)  
Plot No. – 7, 8, 9 & 10  
Sector – 126, Noida, Uttar Pradesh - 201303

## Table of Contents

Section 1: Basic Details .....	3
Section 2: Module Summary .....	6
NOS/s of Qualifications.....	6
Mandatory NOS/s:.....	6
Elective NOS/s: .....	7
Optional NOS/s:.....	8
Assessment - Minimum Qualifying Percentage.....	8
Section 3: Training Related.....	9
Section 4: Assessment Related.....	9
Section 5: Evidence of the Need for the Qualification .....	10
Section 6: Annexure & Supporting Documents Check List.....	10
Annexure: Evidence of Level .....	12
Annexure: Tools and Equipment (lab set-up).....	14
Annexure: Industry Validations Summary.....	14
Annexure: Training & Employment Details .....	15
Annexure: Blended Learning .....	16
Annexure: Detailed Assessment Criteria.....	17
Annexure: Assessment Strategy .....	20
Annexure: Acronym and Glossary .....	21

## Section 1: Basic Details

1. Qualification Name	IT Software Solutions for Business																	
2. Sector/s	IT/ITeS																	
3. Type of Qualification: <input checked="" type="checkbox"/> New <input type="checkbox"/> Revised <input type="checkbox"/> Has Electives/Options <input type="checkbox"/> OEM	NQR Code & version of the existing /previous qualification: (change to previous, once approved)	Qualification Name of the existing/previous version: IT Software Solutions for Business																
4. a. OEM Name b. Qualification Name (Wherever applicable)	IT Software Solutions for Business																	
5. National Qualification Register (NQR) Code & Version (Will be issued after NSQC approval)	QG-4.5-IT-01802-2024-V1-NASSCOM																	
6. Award (Certificate/Diploma/Advance Diploma/ Any Other (Wherever applicable specify multiple entry/exists also & provide details in annexure)	6. NCrF/NSQF Level: 4.5																	
7. Brief Description of the Qualification	Certificate																	
8. Eligibility Criteria for Entry for a Student/Trainee/Learner/Employee	<p>Individuals at this job are responsible for development of software applications and interfaces as well as enhancements to existing packaged applications or pre-engineered templates. The job also involves providing support to custom applications, debugging, maintenance and documentation. This job requires the individual to work independently and be comfortable in making decisions pertaining to his/her area of work. This job may require the personnel to work as an individual contributor or manage a team of junior contributors.</p> <table border="1"> <thead> <tr> <th colspan="3">Entry Qualification &amp; Relevant Experience:</th> </tr> <tr> <th>S.No.</th> <th>Academic/Skill Qualification (with Specialization - if applicable)</th> <th>Required Experience (with Specialization - if applicable)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Completed 1st year of 3-year/ 4-years UG</td> <td></td> </tr> <tr> <td>2</td> <td>Pursuing 1st year of 3-year/ 4-years UG and continuing education</td> <td></td> </tr> <tr> <td>3</td> <td>Previous relevant Qualification of NSQF Level 4</td> <td>1.5 Years of relevant experience</td> </tr> </tbody> </table>			Entry Qualification & Relevant Experience:			S.No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)	1	Completed 1st year of 3-year/ 4-years UG		2	Pursuing 1st year of 3-year/ 4-years UG and continuing education		3	Previous relevant Qualification of NSQF Level 4	1.5 Years of relevant experience
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2	Pursuing 1st year of 3-year/ 4-years UG and continuing education																	
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		<b>Min Age: 19 Years</b>																							
<b>10.</b>	<b>Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</b>	17 Credits	<b>11. Common Cost Norm Category (I/II/III) (wherever applicable): II</b>																						
<b>12.</b>	<b>Any Licensing Requirements for Undertaking Training on This Qualification (wherever applicable)</b>	NA																							
<b>13.</b>	<b>Training Duration by Modes of Training Delivery (Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)</b>	<input checked="" type="checkbox"/> Offline Only <input checked="" type="checkbox"/> Online Only <input type="checkbox"/> Blended <table border="1"> <thead> <tr> <th>Training Delivery Mode</th> <th>Theory (Hours)</th> <th>Practical (Hours)</th> <th>OJT (Mandatory) Hours</th> <th>OJT (Recommended) Hours</th> <th>Total (Hours)</th> </tr> </thead> <tbody> <tr> <td>Classroom (offline)</td> <td>180:00</td> <td>330:00</td> <td>00:00</td> <td>-</td> <td>510:00</td> </tr> <tr> <td>Online</td> <td>180:00</td> <td>330:00</td> <td>00:00</td> <td>-</td> <td>510:00</td> </tr> </tbody> </table>						Training Delivery Mode	Theory (Hours)	Practical (Hours)	OJT (Mandatory) Hours	OJT (Recommended) Hours	Total (Hours)	Classroom (offline)	180:00	330:00	00:00	-	510:00	Online	180:00	330:00	00:00	-	510:00
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Online	180:00	330:00	00:00	-	510:00																				
		<i>(Refer Blended Learning Annexure for details)</i>																							
<b>14.</b>	<b>Aligned to NCO/ISCO Code/s (if no code is available mention the same)</b>	NCO-2015/ NIL																							
<b>15.</b>	<b>Progression Path After Attaining the Qualification, wherever applicable (Please show Professional and Academic progression)</b>	NA																							
<b>16.</b>	<b>Other Indian languages in which the Qualification &amp; Model Curriculum are being submitted</b>	NA																							
<b>17.</b>	<b>Is similar Qualification(s) available on NQR-if yes, justification for this qualification</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No URLs of similar Qualifications:																							
<b>18.</b>	<b>Is the Job Amenable to Persons with Disability</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If "Yes", specify applicable type of Disability: Visual, Hearing or Speech impairment, Locomotor Disability																							

19.	How will participation of women be encouraged?	The Program is gender neutral although to increase women's participation, organizations are keeping aside a few seats to encourage female candidates.	
20.	Are Greening/Environment Sustainability Aspects covered (Specify the NOS/Module which Covers it)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
21.	Is Qualification suitable to be offered in Schools/Colleges	Schools: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No      Colleges <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
22.	Name and Contact Details Submitting / Awarding Body SPOC (In case of CS or MS, provide details of both Lead AB & Supporting ABs)	Name: Namrata Kapur Email: <a href="mailto:Namrata@nasscom.in">Namrata@nasscom.in</a> Contact No.: 0120-4990111 Website: <a href="https://nasscom.in">https://nasscom.in</a>	
23.	Final Approval Date by NSQC: 06 <sup>th</sup> February 2024	24. Validity Duration: 3 Years	25. Next Review Date: 06 <sup>th</sup> February 2026

## Section 2: Module Summary

### NOS/s of Qualifications

*(In Exceptional cases these could be described as components)*

#### Mandatory NOS/s:

Specify the training duration and assessment criteria at NOS/Module level. For Further details refer curriculum document.

Th.-Theory Pr.-Practical OJT-On the Job training Man.-Mandatory Training Rec.-Recommended Proj.- Project

S.No.	NOS Module Name	NOS/Module Code & Version (If Applicable)	Core/Non-Core	NCrF/NSQF Level	Credits as per NcRF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) (if applicable)
1.	Work Organization and Management for IT Software Solutions for Business	SSC/N0808 NOS Version 1	Non-Core	4.5	01	10:00	20:00	00:00	00:00	30:00	15	15	-	-	30	5
2.	Communication and Interpersonal Skills for IT Software Solutions for Business	SSC/N0809 NOS Version 1	Non-Core	4.5	01	10:00	20:00	00:00	00:00	30:00	15	15	-	-	30	5
3.	Problem Solving Innovation, and Creativity	SSC/N0810 NOS Version 1	Core	4.5	03	30:00	60:00	00:00	00:00	90:00	20	40	-	-	60	10

S.No.	NOS Module Name	NOS/Module Code & Version (If Applicable)	Core/Non-Core	NCrF/NSQF Level	Credits as per NcRF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) (if applicable)
4.	Analysis and Design of Software Solutions	SSC/N0811 NOS Version 1	Core	4.5	04	30:00	90:00	00:00	00:00	120:00	50	100	-		150	30
5.	Development of Software Solutions	SSC/N0812 NOS Version 1	Core	4.5	06	80:00	100:00	00:00	00:00	180:00	50	100	-		150	40
6.	Testing Software Solutions	SSC/N0813 NOS Version 1	Core	4.5	02	20:00	40:00	00:00	00:00	60:00	30	50	-		80	10
<b>Duration (in Hours)/Total Marks</b>					<b>17</b>	<b>180.00</b>	<b>330.00</b>	<b>00.00</b>	<b>00.00</b>	<b>510</b>	<b>180</b>	<b>320</b>	<b>-</b>		<b>500</b>	<b>100%</b>

**Elective NOS/s:**

S. No	NOS/Module Name	NOS/Module Code & Version (if applicable)	Core/Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) (if applicable)
1.																
2.																
<b>Duration (in Hours) / Total Marks</b>																

## Optional NOS/s:

S. No	NOS/Module Name	NOS/Module Code & Version (if applicable)	Core/ Non-Core	NCrF/NS QF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks				
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total
1.															
2.															
<b>Duration (in Hours) / Total Marks</b>															

**Assessment - Minimum Qualifying Percentage**

*Please specify any one of the following:*

**Minimum Pass Percentage – Aggregate at qualification level: 70%** (Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)

**Minimum Pass Percentage – NOS/Module-wise:** \_\_\_\_% (Every Trainee should score specified minimum passing percentage in each mandatory and selected elective NOS/Module to successfully clear the assessment.)

### Section 3: Training Related

1.	<b>Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)</b>	Post graduate in Engineering/Technology/ Statistics/ Mathematics/Computer Science/Physical Sciences with Minimum 5 years of relevant experience and 2 years of full-time training experience in programing languages such as HTML, CSS, JavaScript, Python, etc.
2.	<b>Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)</b>	Post graduate in Engineering/Technology/ Statistics/ Mathematics/Computer Science/Physical Sciences with Minimum 7 years of relevant experience and 5 years of full-time training experience in relevant field programing languages such as HTML, CSS, JavaScript, Python, etc.
3.	<b>Tools and Equipment Required for the Training</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>(If "Yes", details to be provided in Annexure)</i>
4.	<b>In Case of Revised Qualification, details of Any Upskilling Required for Trainer</b>	NA

### Section 4: Assessment Related

1.	<b>Assessor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)</b>	Post Graduate in Engineering/Technology/ Statistics/ Mathematics/Computer Science/Physical Sciences with Minimum 5 years of relevant experience and 2 years of full-time training experience in programing languages such as HTML, CSS, JavaScript, Python, etc.
2.	<b>Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines), (wherever applicable)</b>	Post Graduate in Engineering/Technology/ Statistics/ Mathematics/Computer Science/Physical Sciences with Minimum 7 years of relevant experience and 5 years of full-time training experience in relevant field programing languages such as HTML, CSS, JavaScript, Python, etc.
3.	<b>Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)</b>	Post Graduate in Engineering/Technology/ Statistics/ Mathematics/Computer Science/Physical Sciences with a Minimum 10 years of relevant experience and 5 years of full-time training experience in programming languages such as HTML, CSS, JavaScript, Python, etc.

4.	<b>Assessment Mode</b> (Specify the assessment mode)	Can be either in the classroom or online
5.	<b>Tools and Equipment Required for Assessment</b>	<input checked="" type="checkbox"/> Same as for training <input type="checkbox"/> Yes <input type="checkbox"/> No (details to be provided in Annexure-if it is different for Assessment)

## Section 5: Evidence of the Need for the Qualification

Provide Annexure/Supporting documents name.

1.	Latest Skill Gap study (not older than 2 years) (Yes/No): Yes
2.	Latest Market Research Reports or any other source (not older than 2 years) (Yes/No): Yes
3.	Government/Industry initiatives/requirement (Yes/No): NA
4.	Number of industry validations provided: NA
5.	Estimated number of people to be trained and employed: 500
6.	Evidence of Concurrence/Consultation with Line/State Departments: NA  If "No", why:

## Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	<b>Annexure:</b> NCrF/NSQF level justification based on NCrF/NSQF descriptors (Mandatory)	Evidence of Level
2.	<b>Annexure:</b> List of tools and equipment relevant for NOS (Mandatory, except in case of online course)	Tools and Equipment (lab set-up)

3.	<b>Annexure:</b> Detailed Assessment criteria ( <i>Mandatory</i> )	Performance Criteria Details
4.	<b>Annexure:</b> Assessment Strategy ( <i>Mandatory</i> )	Assessment Strategy
5.	<b>Annexure:</b> Blended Learning ( <i>Mandatory, in case selected Mode of delivery is Blended Learning</i> )	NA
6.	<b>Annexure:</b> Multiple Entry Exit Details ( <i>Mandatory, in case qualification has multiple entry-exit</i> )	NA
7.	<b>Annexure:</b> Acronym and Glossary ( <i>Optional</i> )	NA
8.	<b>Supporting Document:</b> Model Curriculum ( <i>Mandatory-Public View</i> )	NA
9.	<b>Supporting Document:</b> Career Progression ( <i>Mandatory-Public View</i> )	NA
10.	<b>Supporting Document:</b> Occupational Map ( <i>Mandatory</i> )	NA
11.	<b>Supporting Document:</b> Assessment SOP ( <i>Mandatory</i> )	Assessment Strategy
12.	<b>Any Other document you wish to submit:</b>	NA

## Annexure: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
<b>Professional Theoretical Knowledge/Process knowledge</b>	The individual on the job needs to collaborate closely with clients, engaging in the modification of existing systems or the creation of new ones. This involves adeptly modifying off-the-shelf software, integrating it into current systems, and contributing to a collaborative team of software professionals.	The individual on the job is responsible for own work and learning. Work in designing environment. Responsibilities encompass the entire software development lifecycle.	4.5
<b>Professional and Technical Skills/ Expertise/ Professional Knowledge</b>	The individual on the job needs to have advanced technical and managerial skills in: <ul style="list-style-type: none"> <li>• Review the current system, conducting a comprehensive analysis Analyze and specify user requirements,</li> <li>• Produce detailed specifications for new systems or modifications to existing systems, outlining the technical requirements and functionalities.</li> <li>• Develop software systems, meticulously coding and programming, followed by thorough testing of the software solution.</li> <li>• Install, implement, and maintain the software system</li> </ul>	This job requires advanced technical and managerial skills in the design of software products and applications, as well as the development of software code to specification.	4.5
<b>Employment Readiness &amp; Entrepreneurship Skills &amp; Mind-set/Professional Skill</b>	The individual on the job needs to have leadership qualities and effective resource management in: <ul style="list-style-type: none"> <li>• Proficient in software design and application development.</li> <li>• Skilled in creating, reviewing, and executing unit test cases (UTCs).</li> <li>• Capable of debugging software and identifying reusable components.</li> <li>• Strong understanding of coding specifications.</li> </ul>	Individuals at this Job need to have the practical skills required to design of software products and applications & develop software code to specification that include creation, review and execution of UTCs, test and debug software, determine reusable components, etc.	4.5

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
	<ul style="list-style-type: none"> <li>Ability to develop software code to meet specified requirements.</li> <li>Knowledgeable in software testing processes and procedures.</li> </ul>		
<b>Broad Learning Outcomes/Core Skill</b>	The individual on the job needs specialized professional and technical skills involving complex variable environments and contexts related to software solutions for business.	Individuals at this job need to have knowledge and skills related to business software solutions, encompassing areas such as problem-solving, innovation, analysis, design, and the development and testing of software solutions.	4.5
<b>Responsibility</b>	The individual on the job needs to be responsible for managing activities like planning, resourcing, processes, and people, within broad parameters and with complete accountability for determining, achieving, and evaluating personal and group outcomes during the creation of software solutions for business.	Individuals at this job are responsible for the development of software applications and interfaces as well as enhancements to existing packaged applications or pre-engineered templates.  The job also involves providing support to custom applications, debugging, maintenance and documentation.	4.5

## Annexure: Tools and Equipment (lab set-up)

**Batch Size:**

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	PC/Laptop with internet	With Wifi (2MBPS Dedicated)	1 Unit per Trainee
2	Relevant Software: CRM Tool for demonstration	Python IDE such as Jupyter, IDLE, etc. Python testing tools such as Pytest, Robot, etc. Java IDE such as Eclipse, maven, etc. Java testing tools such as JUnit IDE for HTML5 development such as VisualStudio, NetBeans, etc.	1 Unit per Trainee
3	Microphone/Voice System	For lecture & class activities	1 Unit for Trainer
4	White Board		1 Unit for Trainer
5	White Board Maker		1 Unit for Trainer
6	Projector		1 Unit

## Annexure: Industry Validations Summary

Provide summary information of all the industry validation in table.

S. No	Organisation Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile (if available)
1							
2							
3							

## Annexure: Training & Employment Details

### Training & Employment Projections:

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employed Opportunities	Estimated Training #	Estimated Employed Opportunities	Estimated Training #	Estimated Employed Opportunities
2023-24	500	350	200	140	50	35
2024-25	1000	700	400	280	100	70
2025-26	1500	1050	600	420	150	105

#The Estimated Data is an average for each state.

### Training, Assessment, Certification, and Placement Data for previous versions of qualifications:

Qualification Version	Year	Total Candidates			Women			People with disability		
		Trained	Assessed	Certified	Trained	Assessed	Certified	Trained	Assessed	Certified
	2022-23	-	-	-	-	-	-	-	-	-

### Content availability for the previous version of qualifications:

Participant Handbook  Facilitator Guide  Digital Content  Qualification Handbook  Any Other:

### Language in which content is available:

## Annexure: Blended Learning

### Blended Learning Estimated Ratio & Recommended Tools:

Refer NCVET “Guidelines for Blended Learning for Vocational Education, Training & Skilling” available on:

<https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilling.pdf>

S. No.	Select the Components of the Qualification	List Recommended Tools – for all Selected Components	Offline : Online Ratio
1	<input type="checkbox"/> Theory/ Lectures - Imparting theoretical and conceptual knowledge	<ul style="list-style-type: none"> <li>Books/ e-books</li> <li>Presentations</li> <li>Reference Material</li> <li>Audio / Video Modules</li> </ul>	40:60
2	<input type="checkbox"/> Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	<ul style="list-style-type: none"> <li>Self-Learning Videos</li> <li>Broadcasts</li> <li>Mobile Learning</li> <li>Curated Digital content</li> </ul>	40:60
3	<input type="checkbox"/> Showing Practical Demonstrations to the learners	<ul style="list-style-type: none"> <li>Video Content</li> <li>E-Resource library</li> <li>AR/ VR/ XR</li> </ul>	40:60
4	<input type="checkbox"/> Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	<ul style="list-style-type: none"> <li>Training tools (tools list attached)</li> <li>Video Play</li> <li>Presentations</li> </ul>	40:60
5	<input type="checkbox"/> Tutorials/ Assignments/ Drill/ Practice	<ul style="list-style-type: none"> <li>Online Question Bank</li> <li>Mobile Quick test app</li> <li>MCQ based tests</li> </ul>	40:60
6	<input type="checkbox"/> Proctored Monitoring/ Assessment/ Evaluation/ Examinations	<ul style="list-style-type: none"> <li>Assessment engine for Essays</li> <li>Up-loadable file examinations</li> <li>Mock test sessions</li> </ul>	40:60
7	<input type="checkbox"/> On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	<ul style="list-style-type: none"> <li>Online tests</li> <li>Offline assessments</li> </ul>	40:60

## Annexure: Detailed Assessment Criteria

Detailed Assessment criteria for each NOS/Module are as follows:

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
SSC/N0808: Work Organization and Management for IT Software Solutions for Business	PC1. Plan each day's production schedule according to available time and take into account time limitations and deadlines	3	3	-	
	PC2. Apply research techniques and skills to keep up-to-date with the latest industry guidelines	4	3	-	
	PC3. Review own performance against the expectations and needs of clients and organizations	4	4	-	
	PC4. Work within the sustainability guidelines expected by the clients and organizations	4	5		
	<b>Total Marks</b>	<b>15</b>	<b>15</b>	-	
SSC/N0809 Communication and Interpersonal Skills for IT Software Solutions for Business	PC1. Use literacy skills to: <ul style="list-style-type: none"> <li>• Follow documented instructions from supplied guides</li> <li>• Interpret workplace instructions and other technical documents</li> <li>• Interpret and understand systems specification documents</li> <li>• Keep up-to-date with latest industry guidelines</li> </ul>	2	2	-	
	PC2. Use oral communication skills to: <ul style="list-style-type: none"> <li>• Discuss and offer suggestions regarding system specifications</li> <li>• Keep clients updated regarding systems' progress</li> <li>• Negotiate with clients regarding project budgets and timelines</li> <li>• Gather and confirm clients' requirements</li> <li>• Present proposed and final software solutions</li> </ul>	3	2	-	
	PC3. Use written communications skills to: <ul style="list-style-type: none"> <li>• Documents and demonstrates solutions by developing documentation, flowcharts, layouts, diagrams, charts, code comments and clear code.</li> <li>• Keep clients updated regarding systems' progress</li> <li>• Confirm that created applications meet original specifications and obtain user sign-off for completed systems</li> </ul>	2	3	-	
	PC4. Use team communication skills to: <ul style="list-style-type: none"> <li>• Collaborate with others to develop required outcomes</li> <li>• Contribute to group problem solving</li> </ul>	3	3	-	
	PC5. Use project management skills to: <ul style="list-style-type: none"> <li>• Prioritize and schedule tasks</li> <li>• Allocate resources to tasks.</li> </ul>	5	5	-	
	<b>Total Marks</b>	<b>15</b>	<b>15</b>	-	
	PC1. Use analytical skills to:	5	15	-	

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
SSC/N0810 Problem Solving Innovation, and Creativity	<ul style="list-style-type: none"> <li>• Synthesize complex or diverse information</li> <li>• Determine the functional and non-functional requirements of specifications</li> </ul>				
	PC2. Use investigation and learning skills to: <ul style="list-style-type: none"> <li>• Obtain user requirements (e.g. interviews, questionnaire, document search and analysis, joint application design, and observation)</li> <li>• Research encountered problems independently</li> </ul>	5	15	-	
	PC3. Use problem-solving skills to: <ul style="list-style-type: none"> <li>• Identify and resolve problems in a timely manner</li> <li>• Gather and analyse information skilfully</li> <li>• Develop alternatives for decision making, select the most appropriate alternatives and produce the required solutions</li> <li>• Develop business logic and computational algorithms for specific tasks</li> </ul>	10	10	-	
	<b>Total Marks</b>	<b>20</b>	<b>40</b>	<b>-</b>	
	PC1. Analyse systems using: <ul style="list-style-type: none"> <li>• Use Case modelling and analysis (e.g. Use Case Diagram, Use Case Description, Actor Description, Use Case Package)</li> <li>• Structural modelling and analysis (e.g. Object, Class, Domain Class Diagram)</li> <li>• Dynamic modelling and analysis (e.g. Sequence Diagram, Collaboration Diagram, State Diagram, Activity Diagram)</li> <li>• Data modelling tools and techniques (e.g. Entity Relationship Diagram, Normalization, Data Dictionary)</li> </ul>	25	50	-	
SSC/N0811 Analysis and Design of Software Solutions	PC2. Design systems using: <ul style="list-style-type: none"> <li>• Class Diagram, Sequence Diagram, State Diagram, Activity Diagram</li> <li>• Object design and package</li> <li>• Relational or object database design</li> <li>• Human-computer interface design</li> <li>• Security and controls design</li> <li>• Multi-tier application design</li> </ul>	25	50	-	
	<b>Total Marks</b>	<b>50</b>	<b>100</b>	<b>-</b>	

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
SSC/N0812: Development of Software Solutions	PC1. Develop software solutions by studying information needs, conferring with users, and studying systems flow, data usage, and work processes	10	15	-	
	PC2. Use database management systems to construct, store and manage the data for the required systems	10	15	-	
	PC3. Use latest software development environments and tools to modify existing codes and write new codes of client-server-based software solutions	10	15	-	
	PC4. Evaluate and integrate appropriate libraries and frameworks into the software solutions	10	15	-	
	PC5. Build multi-tier applications	5	20	-	
	PC6. Construct web enabled or native mobile interfaces for client-server-based systems	5	20	-	
	<b>Total Marks</b>	<b>50</b>	<b>100</b>	-	
SSC/N0813: Testing Software Solutions	PC1. Plan testing activities (e.g. unit testing, volume testing, integration testing, and acceptance testing)	6	10	-	
	PC2. Design test cases with data and check results of test cases	6	10	-	
	PC3. Debug and handle errors	6	10	-	
	PC4. Report on test processes	6	10	-	
	PC5. The implementation of black and white box testing	6	10	-	
	<b>Total Marks</b>	<b>30</b>	<b>50</b>	-	
	<b>Grand Total Marks</b>	<b>180</b>	<b>320</b>	-	

## Annexure: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

### Assessment System Overview

A uniform assessment of job candidates per industry standards facilitates the industry's progress by filtering employable individuals while simultaneously providing candidates with an analysis of personal strengths and weaknesses.

### Assessment Criteria

The Sector Skill Council will create criteria for assessment for each Qualification Pack. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down the proportion of marks for Theory and Skills Practical for each PC. The assessment for the theory part will be based on a knowledge bank of questions created by the SSC. Assessment will be conducted for all compulsory NOS and where applicable, on the selected elective/option NOS/set of NOS.

Guidelines for Assessment			
Testing Environment	Tasks and Functions	Productivity	Teamwork
<ul style="list-style-type: none"> <li>Carry out assessments under realistic work pressures found in the normal industry workplace (or simulated workplace).</li> <li>Ensure that the range of materials, equipment, and tools that learners use are current and of the type routinely found in the normal industry workplace (or simulated workplace) environments.</li> </ul>	<ul style="list-style-type: none"> <li>Assess that all tasks and functions are completed in a way, and to a timescale that is acceptable in the normal industry workplace.</li> <li>Assign workplace (or simulated workplace) responsibilities that enable learners to meet the requirements of the NOS.</li> </ul>	<ul style="list-style-type: none"> <li>Productivity levels must be checked to ensure that it reflects those that are found in the work situation being replicated.</li> </ul>	<ul style="list-style-type: none"> <li>Provide situations that allow learners to interact with the range of personnel and contractors found in the normal industry workplace (or simulated workplace).</li> </ul>

## Annexure: Acronym and Glossary

### Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework
OJT	On Job Training

### Glossary

Term	Description
<b>National Occupational Standards (NOS)</b>	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
<b>Qualification</b>	A formal outcome of an assessment and validation process is obtained when a competent body determines that an individual has achieved learning outcomes to given standards.
<b>Qualification File</b>	A Qualification File is a template designed to capture necessary information about a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
<b>Sector</b>	A grouping of professional activities based on their main economic function, product, service, or technology.

## Annexure: Market Research & Gap Analysis

NA