

## QUALIFICATION FILE

### IoT Software Analyst

- ☒ Short Term Training (STT) ☐ Long Term Training (LTT) ☐ Apprenticeship  
☒ Upskilling ☐ Dual/Flexi Qualification ☐ For ToT  
☐ For ToA
- ☐ General ☐ Multi-skill (MS) ☐ Cross Sectoral (CS) ☒ FutureSkills ☐ OEM

NCrF/NSQF Level: 5.5

Submitted By:

IT-ITes Sector Skills Council NASSCOM (SSC NASSCOM)

Plot No. – 7, 8, 9 & 10

Sector – 126, Noida, Uttar Pradesh - 201303

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## Section 1: Basic Details

|    |                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                           |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| 1. | Qualification Name                                                                                                                                                          | IoT Software Analyst                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                           |
| 2. | Sector/s                                                                                                                                                                    | IT/ITeS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                           |
| 3. | Type of Qualification: <input type="checkbox"/> New <input checked="" type="checkbox"/> Revised <input type="checkbox"/> Has Electives/Options <input type="checkbox"/> OEM | NQR Code & version of the existing /previous qualification: QG-06-IT-01563-2023-V1.1-NASSCOM & Version 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Qualification Name of the existing/previous version: IoT Software Analyst |
| 4. | a. OEM Name<br>b. Qualification Name (Wherever applicable)                                                                                                                  | IoT Software Analyst                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                           |
| 5. | National Qualification Register (NQR) Code &Version<br>(Will be issued after NSQC approval)                                                                                 | QG-5.5-IT-045972025-V2-NASSCOM & Version 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 6. NCrf/NSQF Level: 5.5                                                   |
| 7. | Award (Certificate/Diploma/Advance Diploma/ Any Other<br>(Wherever applicable specify multiple entry/exits also & provide details in annexure)                              | Certificate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                           |
| 8. | Brief Description of the Qualification                                                                                                                                      | The IoT Software Analyst role, based on the modules you've posted, involves designing, developing, testing, and maintaining end-to-end IoT solutions. Key activities include working with connectivity protocols, developing and integrating software at device, platform, and cloud levels, ensuring system reliability, and testing for functionality and performance. The role also emphasizes automation (CI/CD pipelines), configuration management, quality assurance through various testing methods (functional, non-functional, end-to-end), and proper documentation. Skills required include programming , working with IoT platforms, managing source code, employing DevOps tools, and ensuring system security and compliance. Overall, the analyst is crucial in enabling seamless, reliable, and secure IoT systems from development to deployment. |                                                                           |
| 9. | Eligibility Criteria for Entry for a Student/Trainee/Learner/Employee                                                                                                       | <b>Entry Qualification &amp; Relevant Experience:</b><br><br>* Relevant Field- Computer Science/ IT/IoT/Software Development<br>The relevant experience would include work, internship and apprenticeship after completing relevant educational qualifications.<br>** PG or UG or diploma with courses related to Engg./ Science                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                           |

|                        |                                                                                                                                                                              | <table border="1"> <tr> <th>S. No.</th><th>Academic/Skill Qualification (with Specialization - if applicable)</th><th>Required Experience (with Specialization - if applicable)</th></tr> <tr> <td>1</td><td>Completed 3<sup>rd</sup> year of UG**</td><td>-</td></tr> <tr> <td>2</td><td>Completed 3-Year Diploma** after 10<sup>th</sup></td><td>3 years of relevant experience*</td></tr> <tr> <td>3</td><td>Previous Relevant qualification of NSQF level 5</td><td>1.5 years of relevant experience*</td></tr> </table> <p><b>Min Age:</b> NA</p> |                                                                                    |                         |               |  |                        | S. No.         | Academic/Skill Qualification (with Specialization - if applicable) | Required Experience (with Specialization - if applicable) | 1                       | Completed 3 <sup>rd</sup> year of UG** | -                   | 2   | Completed 3-Year Diploma** after 10 <sup>th</sup> | 3 years of relevant experience* | 3 | Previous Relevant qualification of NSQF level 5 | 1.5 years of relevant experience* |     |     |    |   |     |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------|---------------|--|------------------------|----------------|--------------------------------------------------------------------|-----------------------------------------------------------|-------------------------|----------------------------------------|---------------------|-----|---------------------------------------------------|---------------------------------|---|-------------------------------------------------|-----------------------------------|-----|-----|----|---|-----|
| S. No.                 | Academic/Skill Qualification (with Specialization - if applicable)                                                                                                           | Required Experience (with Specialization - if applicable)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                    |                         |               |  |                        |                |                                                                    |                                                           |                         |                                        |                     |     |                                                   |                                 |   |                                                 |                                   |     |     |    |   |     |
| 1                      | Completed 3 <sup>rd</sup> year of UG**                                                                                                                                       | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                    |                         |               |  |                        |                |                                                                    |                                                           |                         |                                        |                     |     |                                                   |                                 |   |                                                 |                                   |     |     |    |   |     |
| 2                      | Completed 3-Year Diploma** after 10 <sup>th</sup>                                                                                                                            | 3 years of relevant experience*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                    |                         |               |  |                        |                |                                                                    |                                                           |                         |                                        |                     |     |                                                   |                                 |   |                                                 |                                   |     |     |    |   |     |
| 3                      | Previous Relevant qualification of NSQF level 5                                                                                                                              | 1.5 years of relevant experience*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                    |                         |               |  |                        |                |                                                                    |                                                           |                         |                                        |                     |     |                                                   |                                 |   |                                                 |                                   |     |     |    |   |     |
| 10.                    | <b>Credits Assigned to this Qualification, Subject to Assessment</b> ( <i>as per National Credit Framework (NCrF)</i> )                                                      | 18 Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>11. Common Cost Norm Category (I/II/III)</b> ( <i>wherever applicable</i> ): II |                         |               |  |                        |                |                                                                    |                                                           |                         |                                        |                     |     |                                                   |                                 |   |                                                 |                                   |     |     |    |   |     |
| 12.                    | <b>Any Licensing Requirements for Undertaking Training on This Qualification</b> ( <i>wherever applicable</i> )                                                              | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                         |               |  |                        |                |                                                                    |                                                           |                         |                                        |                     |     |                                                   |                                 |   |                                                 |                                   |     |     |    |   |     |
| 13.                    | <b>Training Duration by Modes of Training Delivery</b> ( <i>Specify Total Duration as per selected training delivery modes and as per requirement of the qualification</i> ) | <input type="checkbox"/> Offline Only <input type="checkbox"/> Online Only <input checked="" type="checkbox"/> Blended                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                    |                         |               |  |                        |                |                                                                    |                                                           |                         |                                        |                     |     |                                                   |                                 |   |                                                 |                                   |     |     |    |   |     |
|                        |                                                                                                                                                                              | <table border="1"> <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> <tr> <td>Classroom (offline)</td><td>180</td><td>270</td><td>90</td><td>-</td><td>540</td></tr> <tr> <td>Online</td><td>180</td><td>270</td><td>90</td><td>-</td><td>540</td></tr> </table>                                                                                                                                                          |                                                                                    |                         |               |  | Training Delivery Mode | Theory (Hours) | Practical (Hours)                                                  | OJT (Mandatory) Hours                                     | OJT (Recommended) Hours | Total (Hours)                          | Classroom (offline) | 180 | 270                                               | 90                              | - | 540                                             | Online                            | 180 | 270 | 90 | - | 540 |
| Training Delivery Mode | Theory (Hours)                                                                                                                                                               | Practical (Hours)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OJT (Mandatory) Hours                                                              | OJT (Recommended) Hours | Total (Hours) |  |                        |                |                                                                    |                                                           |                         |                                        |                     |     |                                                   |                                 |   |                                                 |                                   |     |     |    |   |     |
| Classroom (offline)    | 180                                                                                                                                                                          | 270                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 90                                                                                 | -                       | 540           |  |                        |                |                                                                    |                                                           |                         |                                        |                     |     |                                                   |                                 |   |                                                 |                                   |     |     |    |   |     |
| Online                 | 180                                                                                                                                                                          | 270                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 90                                                                                 | -                       | 540           |  |                        |                |                                                                    |                                                           |                         |                                        |                     |     |                                                   |                                 |   |                                                 |                                   |     |     |    |   |     |
|                        |                                                                                                                                                                              | (Refer Blended Learning Annexure for details)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                    |                         |               |  |                        |                |                                                                    |                                                           |                         |                                        |                     |     |                                                   |                                 |   |                                                 |                                   |     |     |    |   |     |
| 14.                    | <b>Aligned to NCO/ISCO Code/s</b> ( <i>if no code is available mention the same</i> )                                                                                        | NCO- 2015/2512                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                    |                         |               |  |                        |                |                                                                    |                                                           |                         |                                        |                     |     |                                                   |                                 |   |                                                 |                                   |     |     |    |   |     |
| 15.                    | <b>Progression Path After Attaining the Qualification, wherever applicable</b> ( <i>Please show Professional and Academic progression</i> )                                  | <p>This entry should refer to one or more of the following:</p> <p><b>Professional progression:</b> access to related qualification(s) at the next NSQF level: Senior IoT Software Analyst, IoT Solution Architect, IoT Product Manager</p> <p><b>Academic progression:</b> access to related qualification(s) at the next NSQF level: IoT Test Analyst, IoT Product Analyst, IoT Data Analyst</p>                                                                                                                                                     |                                                                                    |                         |               |  |                        |                |                                                                    |                                                           |                         |                                        |                     |     |                                                   |                                 |   |                                                 |                                   |     |     |    |   |     |

|     |                                                                                                                                     |                                                                                                                                                                                    |                                                    |
|-----|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| 16. | Other Indian languages in which the Qualification & Model Curriculum are being submitted                                            | Hindi                                                                                                                                                                              |                                                    |
| 17. | Is similar Qualification(s) available on NQR-if yes, justification for this qualification                                           | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No URLs of similar Qualifications:                                                                                |                                                    |
| 18. | Is the Job Amenable to Persons with Disability                                                                                      | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No<br>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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No DGT/VSQ/N0102: Employability Skills (60 Hours)                                                                 |                                                    |
| 21. | Is Qualification suitable to be offered in Schools/Colleges                                                                         | Schools: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Colleges <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                          |                                                    |
| 22. | Name and Contact Details Submitting / Awarding Body SPOC<br>(In case of CS or MS, provide details of both Lead AB & Supporting ABs) | Name: Namrata Kapur<br>Email: Standards@nasscom.in<br>Contact No.: 0120-4990111<br>Website: <a href="https://www.sscnasscom.com/">https://www.sscnasscom.com/</a>                  |                                                    |
| 23. | Final Approval Date by NSQC: 7 <sup>th</sup> October 2025                                                                           | 24. Validity Duration: 3 Years                                                                                                                                                     | 25. Next Review Date: 7 <sup>th</sup> October 2028 |

## 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 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.    | Design, develop and maintain software across appropriate layers of IoT solutions                  | SSC/N8218, V3                             | Core           | 5.5             | 04                  | 45:00                     | 60:00 | 15:00    | 00:00    | 120:00 | 30               | 50  | -     | 20   | 100   | 15                            |
| 2.    | Develop software applications and manage application lifecycle for IoT solutions                  | SSC/N8219, V3                             | Core           | 5.5             | 03                  | 30:00                     | 45:00 | 15:00    | 00:00    | 90:00  | 30               | 50  | -     | 20   | 100   | 15                            |
| 3.    | Develop tools, processes and mechanisms for continuous integration and delivery for IoT solutions | SSC/N8245, V1                             | Core           | 5.5             | 04                  | 45:00                     | 60:00 | 15:00    | 00:00    | 120:00 | 30               | 50  | -     | 20   | 100   | 15                            |

| 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.                 | Develop simulations and manage tests for end-to-end IoT solutions | SSC/N8224, V3                             | Core           | 5.5             | 02                  | 15:00                     | 30:00         | 15:00        | 00:00        | 60:00         | 30               | 50         | -        | 20         | 100        | 15                            |
| 5.                 | Understand functional & non-functional testing of IoT solutions   | SSC/N8244, V1                             | Core           | 5.5             | 02                  | 16:00                     | 29:00         | 15:00        | 00:00        | 60:00         | 30               | 50         | -        | 20         | 100        | 15                            |
| 6.                 | Create technical documents and manuals                            | SSC/N8238, V3                             | Core           | 5.5             | 01                  | 05:00                     | 10:00         | 15:00        | 00:00        | 30:00         | 30               | 50         | -        | 20         | 100        | 15                            |
| 7.                 | Employability Skills (60 Hours)                                   | DGT/VSQ/N0102, V1                         | Non-Core       | 4               | 02                  | 24:00                     | 36:00         | 00:00        | 00:00        | 60:00         | 20               | 30         | -        | -          | 50         | 10                            |
| <b>Grand Total</b> |                                                                   |                                           |                |                 | <b>18</b>           | <b>180:00</b>             | <b>270:00</b> | <b>90:00</b> | <b>00:00</b> | <b>540:00</b> | <b>200</b>       | <b>330</b> | <b>-</b> | <b>120</b> | <b>650</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 | Weightage (%) (if applicable) |
| 1.                                |                 |                                           |               |                  |                     |                           |     |          |          |       |                  |     |       |      |       |                               |
| 2.                                |                 |                                           |               |                  |                     |                           |     |          |          |       |                  |     |       |      |       |                               |
| Duration (in Hours) / Total Marks |                 |                                           |               |                  |                     |                           |     |          |          |       |                  |     |       |      |       |                               |

## 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>        | <p><b>Educational Qualification:</b> Graduate (Engineering/ Technology/ Computer Science)</p> <p><b>Industry &amp; training experience:</b> 2 years of industry experience in IoT. The industry experience would include work, internship, and apprenticeships undertaken after regular graduation.</p> <p><b>Certification:</b> "Trainer" mapped to the Qualification Pack "MEP/Q2601" Minimum accepted score is 80% aggregate</p> |
| 2. | <b>Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)</b> | <p><b>Educational Qualification:</b> Graduate (Engineering/ Technology/ Computer Science)</p> <p><b>Industry &amp; training experience:</b> 4 years of industry experience in IoT. The full-time experience would include work, internship, and apprenticeship undertaken after regular graduation.</p>                                                                                                                             |

|    |                                                                                         |                                                                                                                              |
|----|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                                         | <b>Certification:</b> “Master Trainer” mapped to the Qualification Pack “MEP/Q2602” Minimum accepted score is 90% aggregate. |
| 3. | <b>Tools and Equipment Required for the Training</b>                                    | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (If “Yes”, details to be provided in Annexure)           |
| 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>                       | <p><b>Educational Qualification:</b> Graduate (Engineering/ Technology/ Computer Science)</p> <p><b>Industry &amp; Training Experience:</b> 2 years of industry experience in IoT. The full-time experience would include work, internship, and apprenticeship undertaken after regular graduation.</p> <p><b>Certification:</b> “Assessor” mapped to the Qualification Pack “MEP/Q2701” Minimum accepted score is 80% aggregate.</p>   |
| 2. | <b>Proctor’s Qualification and experience in relevant sector (in years) (as per NCVET guidelines), (wherever applicable)</b> | <p><b>Educational Qualification:</b> Graduate (Engineering/ Technology/ Computer Science)</p> <p><b>Industry &amp; Training Experience:</b> 2 years of industry experience IoT. The full-time experience would include work, internship, and apprenticeship undertaken after regular graduation.</p> <p><b>Certification:</b> “Assessor” mapped to the Qualification Pack “MEP/Q2701” Minimum accepted score is 80% aggregate.</p>      |
| 3. | <b>Lead Assessor’s/Proctor’s Qualification and experience in relevant sector (in years) (as per NCVET guidelines)</b>        | <p><b>Educational Qualification:</b> Graduate (Engineering/ Technology/ Computer Science)</p> <p><b>Industry &amp; Training Experience:</b> 4 years of industry experience IoT. The full-time experience would include work, internship, and apprenticeship undertaken after regular graduation.</p> <p><b>Certification:</b> “Lead Assessor” mapped to the Qualification Pack “MEP/Q2702” Minimum accepted score is 90% aggregate.</p> |

|    |                                                             |                                                                                                                                                                                                                                                                                                          |
|----|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4. | <b>Assessment Mode</b> <i>(Specify the assessment mode)</i> | The assessment will consist of a blend of hands-on practical evaluations, viva-voce, and online proctored scenario-based multiple-choice questions ensuring a thorough evaluation of the individual's proficiency in learning outcomes, practical understanding, and real-world application of concepts. |
| 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 <i>(details to be provided in Annexure-if it is different for Assessment)</i>                                                                                                          |

## 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): NA                              |
| 2. | Latest Market Research Reports or any other source (not older than 2 years) (Yes/No): NA  |
| 3. | Government/Industry initiatives/requirement (Yes/No): 15                                  |
| 4. | Number of industry validations provided: NA                                               |
| 5. | Estimated number of people to be trained and employed: NA                                 |
| 6. | Evidence of Concurrence/Consultation with Line/State Departments: NA<br><br>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 <i>(Mandatory)</i>                  | Evidence of Level                |
| 2. | <b>Annexure:</b> List of tools and equipment relevant for NOS <i>(Mandatory, except in case of online course)</i> | 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> )                                    | MC_SSC/Q8205_IoT Software Analyst_V4.0 |
| 9.  | <b>Supporting Document:</b> Career Progression ( <i>Mandatory-Public View</i> )                                  | NA                                     |
| 10. | <b>Supporting Document:</b> Occupational Map ( <i>Mandatory</i> )                                                | IT-ITeS Occupation Map                 |
| 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 |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Process                     | <ul style="list-style-type: none"> <li>Develop operating systems at the device layer</li> <li>Apply connectivity protocols for communications between solution components</li> <li>Develop applications that run on IoT platforms</li> <li>Gather requirements for development of software application from relevant stakeholders</li> </ul> | The individual in this role must work in a constantly changing environment where he/she needs to develop software code while actively engage with other stakeholders within the company. | 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>Use Application Management Services</li> <li>Monitor and manage deployed application</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                            | To perform his/her role and to collaborate with other stakeholders effectively, the individual requires a vast understanding of the processes used to build software. The individual needs to combine a knowledge of the processes along with a solid understanding of their contexts.                            |                 |
| Professional knowledge      | <ul style="list-style-type: none"> <li>Knowledge of design, develop and maintain software applications, libraries, server software and APIs</li> <li>How to design, develop and maintain reports, graphs and visualization dashboards of IoT solution</li> <li>Monitor firmware and software updates</li> <li>Design, develop and maintain applications to run on standard IoT platforms (such as Azure IoT, AWS IoT, PTC ThingWorx, etc.)</li> <li>Design, develop and maintain IoT device management with Over the Air functionality</li> </ul> | <p>The individual in the role must have a vast amount of knowledge across the different aspects of software development across the entire IoT stack.</p> <p>This knowledge across various disciplines must be accompanied with an in-depth understanding of each discipline to perform this role effectively.</p> | 5               |
| Professional skill          | <ul style="list-style-type: none"> <li>The range of code generation tools and unit testing tools used to develop software code</li> <li>Knowledge of various development methodologies (such as agile, scrum, etc.)</li> <li>Knowledge of Application Management Services</li> <li>Knowledge of Application Monitoring Services</li> <li>Different data flows and structures</li> <li>Different algorithmic models and their design</li> </ul>                                                                                                    | The role demands a skillset that allows the individual to build software code. This requires a wide range of skills. The individual therefore needs to be proficient at using several tools must have the analytical ability to use them effectively.                                                             | 5               |
| Core skill                  | <ul style="list-style-type: none"> <li>Knowledge of design, develop and maintain software applications, libraries, server software and APIs</li> <li>Design, develop and maintain reports, graphs and visualization dashboards of IoT solution</li> <li>Continually evaluate software reliability and performance</li> </ul>                                                                                                                                                                                                                      | The individual must apply his/her software development skills along with a sound understand larger business, technological and regulatory trends. This would enable him/her to build code across the stack and effectively in line with industry best practices.                                                  | 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>Use DevOps tools for automated deployment and monitoring of software applications</li> <li>Follow instructions, guidelines, procedures, rules and service level agreements</li> <li>Provide opinions on work in a detailed and constructive way</li> </ul>                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                           |                 |
| Responsibility              | <ul style="list-style-type: none"> <li>Make decisions on suitable courses</li> <li>Pass on relevant information to others</li> <li>Contribute to the quality of team working</li> <li>Apply balanced judgments to different situations</li> <li>Check your work is complete and free from errors</li> <li>Ensure that software being developed is deployed across the IoT solution as per specifications</li> </ul> | The role demands working in a team to create and maintain software. This may involve helping peers with their work from time to time and providing feedback and advice to help improve the quality of their work. Since this role is likely to have people reporting to it, the individual performing this role is supposed to take responsibility for the output and the development of the entire team. | 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                                      | -                                                                                               |                                   |
| 2      | Microcontrollers/devices for IoT prototyping and deployment. | Raspberry Pi / Arduino IDE / ESP8266 / ESP32                                                    |                                   |
| 3      | Physical devices                                             | Sensors, Actuators and Gateways                                                                 |                                   |
| 4      | Optional Network Equipment                                   | Wi-Fi routers, switches, USB-to-serial converters, and cables, for device connectivity testing. |                                   |
| 5      | Operating Systems                                            | Linux (Ubuntu, Debian)                                                                          |                                   |
| 6      | IDEs & Code Editors                                          | VSCode                                                                                          |                                   |
| 7      | Microcontroller Software                                     | Arduino IDE                                                                                     |                                   |
| 8      | Connectivity Protocols & Tools                               | Wireshark                                                                                       |                                   |

|    |                                  |                          |  |
|----|----------------------------------|--------------------------|--|
| 9  | IoT Platforms                    | OpenHab                  |  |
| 10 | Cloud & Integration              | AWS IoT Core (free tier) |  |
| 11 | API Testing                      | Postman                  |  |
| 12 | DevOps & Automation              | Jenkins, Git             |  |
| 13 | Containerization & Orchestration | Docker                   |  |
| 14 | Data Analytics & Visualization   | ELK Stack                |  |
| 15 | Simulation & Testing             | Cooja                    |  |
| 16 | Security & Vulnerability         | OpenVAS                  |  |
| 17 | Documentation                    | GoogleDocs               |  |
| 18 | Test Data Generation             | Faker                    |  |

\*Tools are open source

## 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                                                                                                                                                                                                                                                     |
|-------|-------------------|-------------------------|-------------------------|-----------------|------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Wipro             | Narendra Nande          | Director                | -               | 9900086708       | <a href="mailto:narendra.nande@wipro.com">narendra.nande@wipro.com</a>                                             | <a href="https://www.linkedin.com/in/narendra-nande-84402a2/?originalSubdomain=in">https://www.linkedin.com/in/narendra-nande-84402a2/?originalSubdomain=in</a>                                                                                                      |
| 2     | Skillsda          | Sankar Vijyan/Thiru R   | Centre Manager/Head R&D | -               | 9894801793       | <a href="mailto:sv@skillsda.com">sv@skillsda.com</a><br><a href="mailto:thiru@skillsda.com">thiru@skillsda.com</a> | <a href="https://www.linkedin.com/in/sankar-vijayan-73a33852/">https://www.linkedin.com/in/sankar-vijayan-73a33852/</a><br><a href="https://www.linkedin.com/in/dr-thirukkumaran-raman-1435a1216/">https://www.linkedin.com/in/dr-thirukkumaran-raman-1435a1216/</a> |
| 3     | Forbes            | Naveenkumar Janakiraman | Data Research Analyst   | -               | 9976773109       | <a href="mailto:naveenkumarj4997@gmail.com">naveenkumarj4997@gmail.com</a>                                         | -                                                                                                                                                                                                                                                                    |
| 4     | Sankey Solutions  | Chandan Rajurohit       | Solution lead           | -               | 8369853182       | <a href="mailto:Chandan.r1@sankeysolutions.com">Chandan.r1@sankeysolutions.com</a>                                 | -                                                                                                                                                                                                                                                                    |
| 5     | Intellibren       | Kailash PD              | Director                | -               | 6374700185       | <a href="mailto:Kailash@intellibren.com">Kailash@intellibren.com</a>                                               | -                                                                                                                                                                                                                                                                    |
| 6     | Mind share        | Pamindar Singh          | Team Lead               | -               | 8713901984       | <a href="mailto:paminder.singh@themindshare.in">paminder.singh@themindshare.in</a>                                 | <a href="https://www.linkedin.com/in/paminder-singh-7990b8101/">https://www.linkedin.com/in/paminder-singh-7990b8101/</a>                                                                                                                                            |

|    |                           |                         |                           |   |            |                                                                                            |                                                                                                                                                                                   |
|----|---------------------------|-------------------------|---------------------------|---|------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7  | Amazon                    | Asvin Ragav R           | Data Associate            | - | 9994308478 | <a href="mailto:asvinragav16@gmail.com">asvinragav16@gmail.com</a>                         | -                                                                                                                                                                                 |
| 8  | Data Switch               | Thilak hariharaSudhan A | Product Engineer          | - | 6393798750 | <a href="mailto:thilakhariharan@gmail.com">thilakhariharan@gmail.com</a>                   | <a href="https://www.linkedin.com/in/thilak-hariharasudhan-43a89b269/?originalSubdomain=in">https://www.linkedin.com/in/thilak-hariharasudhan-43a89b269/?originalSubdomain=in</a> |
| 9  | Q Acadmey                 | Deepak Gour             | Product and Academic Head | - | 9893554394 | <a href="mailto:deepak@qacademy.ca">deepak@qacademy.ca</a>                                 | <a href="https://ca.linkedin.com/in/deepak-gour-8853968">https://ca.linkedin.com/in/deepak-gour-8853968</a>                                                                       |
| 10 | Frontier                  | Santhosh kumar S        | DevOps Engineer L1        | - | 9655747400 | <a href="mailto:santhoshselvaraj24031998@gmail.com">santhoshselvaraj24031998@gmail.com</a> | -                                                                                                                                                                                 |
| 11 | Kornferry                 | Ragul                   | Data analyst              | - | 9659964881 | <a href="mailto:ragulblooper143@gmail.com">ragulblooper143@gmail.com</a>                   | -                                                                                                                                                                                 |
| 12 | Tata consultancy services | Karthiga N              | Test Analyst              | - | 7092257551 | <a href="mailto:karthiga0115@gmail.com">karthiga0115@gmail.com</a>                         | -                                                                                                                                                                                 |
| 13 | Accenture                 | Sree Karthikeyan        | Cybersecurity IAM Analyst | - | 9626165768 | <a href="mailto:sreekarthikeyan0898@gmail.com">sreekarthikeyan0898@gmail.com</a>           | <a href="https://www.linkedin.com/in/sree-karthikeyan-a88a84187/?originalSubdomain=in">https://www.linkedin.com/in/sree-karthikeyan-a88a84187/?originalSubdomain=in</a>           |
| 14 | IBM                       | Arpita Majumder         | Tech Consultant           | - | 7894369677 | <a href="mailto:Arpita.majumder@ibm.com">Arpita.majumder@ibm.com</a>                       | <a href="https://www.linkedin.com/in/arpita-majumder-85612a67/">https://www.linkedin.com/in/arpita-majumder-85612a67/</a>                                                         |
| 15 | RnD Soft                  | Tamilselvan             | IT Support Manager        | - | 9361784871 | <a href="mailto:dtamilselvan1004@gmail.com">dtamilselvan1004@gmail.com</a>                 |                                                                                                                                                                                   |

## 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 | -                    | -                                | -                    | -                                | -                      | -                                |
| 2024-25 | -                    | -                                | -                    | -                                | -                      | -                                |
| 2025-26 | -                    | -                                | -                    | -                                | -                      | -                                |

#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: 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/N8218<br>Design, develop and maintain software across appropriate layers of IoT solutions | PC1. design, develop and maintain real-time operating systems at the device layer                                                                                          | 3            | 4               | -             | 1          |
|                                                                                               | PC2. design, develop and maintain device software which enables access to device hardware                                                                                  | 1            | 2               | -             | 1          |
|                                                                                               | PC3. design, develop and maintain device software which enables features such as remote controlling the device, upgrading its firmware, monitoring its battery level, etc. | 2            | 3               | -             | 1          |
|                                                                                               | PC4. design, develop and maintain firmware that enables wired/wireless connectivity between the end device and IoT gateway                                                 | 2            | 3               | -             | 1          |
|                                                                                               | PC5. apply appropriate wired/wireless connectivity protocols for device-device or device-gateway communications                                                            | 2            | 3               | -             | 1          |
|                                                                                               | PC6. design, develop and maintain IoT device management with Over the Air functionality                                                                                    | 2            | 2               | -             | 1          |
|                                                                                               | PC7. design, develop and maintain the deployment of analytics packet Over the Air updates on the devices through the IoT device management platform                        | 1            | 2               | -             | 1          |
|                                                                                               | PC8. evaluate IOT Device Management Commercial off-the-shelf platforms                                                                                                     | 1            | 2               | -             | 1          |

| NOS/Module Name                                                                               | Assessment Criteria for Performance Criteria/Learning Outcomes                                                                                                  | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|---------------|------------|
|                                                                                               | PC9. design, develop and maintain applications to run on standard IoT platforms                                                                                 | 2            | 4               | -             | 1          |
|                                                                                               | PC10. design, develop and maintain software which enables IoT platforms to interact with large numbers of devices and gateways                                  | 1            | 2               | -             | 1          |
|                                                                                               | PC11. design, develop and maintain a central registry to identify the devices/gateways running in an IoT solution                                               | 1            | 2               | -             | 1          |
|                                                                                               | PC12. design, develop and maintain scalable processing solutions with the ability to store and analyze data                                                     | 1            | 2               | -             | 1          |
|                                                                                               | PC13. design, develop and maintain software applications, libraries, server software and APIs                                                                   | 2            | 4               | -             | 1          |
|                                                                                               | PC14. design and develop analytics solutions for the edge / platform layers                                                                                     | 1            | 2               | -             | 1          |
|                                                                                               | PC15. develop & deploy a variety of streaming analytics / complex events / monitoring requirement for various use-cases                                         | 1            | 2               | -             | 1          |
|                                                                                               | PC16. design, develop and maintain user experience interfaces across layers of the IoT solution                                                                 | 1            | 2               | -             | 1          |
|                                                                                               | PC17. design, develop and maintain reports, graphs and visualization dashboards of IoT solution                                                                 | 1            | 1               | -             | 1          |
|                                                                                               | PC18. continually evaluate software reliability and performance                                                                                                 | 1            | 2               | -             | 1          |
|                                                                                               | PC19. use DevOps tools for automated deployment and monitoring of software applications                                                                         | 1            | 2               | -             | 1          |
|                                                                                               | PC20. continually evaluate software reliability, power and performance                                                                                          | 3            | 4               | -             | 1          |
|                                                                                               | <b>Total Marks</b>                                                                                                                                              | <b>30</b>    | <b>50</b>       | <b>-</b>      | <b>20</b>  |
| SSC/N8219<br>Develop software applications and manage application lifecycle for IoT solutions | PC1. gather requirements for the development of software applications from relevant stakeholders                                                                | 4            | 3               | -             | 2          |
|                                                                                               | PC2. ensure regulatory and compliance requirements are also identified                                                                                          | 2            | 2               | -             | 1          |
|                                                                                               | PC3. categorize specifications and prioritize them based on when they must be developed                                                                         | 1            | 3               | -             | 1          |
|                                                                                               | PC4. design and develop software applications for the IoT solution                                                                                              | 3            | 5               | -             | 2          |
|                                                                                               | PC5. continuously verify that the application is in line with the specified requirements                                                                        | 3            | 4               | -             | 1          |
|                                                                                               | PC6. identify appropriate methodologies (such as agile, scrum, etc.) to structure, plan, and control the solution development process                           | 3            | 4               | -             | 2          |
|                                                                                               | PC7. develop and run test cases on the application being built                                                                                                  | 1            | 2               | -             | 1          |
|                                                                                               | PC8. plan the deployment model of the application                                                                                                               | 1            | 2               | -             | 1          |
|                                                                                               | PC9. roll out the application when it is ready for release                                                                                                      | 1            | 2               | -             | 1          |
|                                                                                               | PC10. use Application Management Services to provide ongoing application support to external providers                                                          | 1            | 2               | -             | 1          |
|                                                                                               | PC11. use Application Monitoring Services to delegate the responsibilities of monitoring and releasing patches, bug-fixes, and enhancements to external vendors | 1            | 2               | -             | 1          |
|                                                                                               | PC12. monitor and manage deployed application                                                                                                                   | 3            | 6               | -             | 1          |
|                                                                                               | PC13. continuously look for and resolve bugs in software application                                                                                            | 3            | 7               | -             | 2          |
|                                                                                               | PC14. plan for application updates and patches                                                                                                                  | 1            | 2               | -             | 1          |

| NOS/Module Name                                                                                                | Assessment Criteria for Performance Criteria/Learning Outcomes                                                                 | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|---------------|------------|
|                                                                                                                | PC15. plan for application upgrades                                                                                            | 1            | 2               | -             | 1          |
|                                                                                                                | PC16. plan for the retirement of application and migration to a new application                                                | 1            | 2               | -             | 1          |
|                                                                                                                | <b>Total Marks</b>                                                                                                             | <b>30</b>    | <b>50</b>       | <b>-</b>      | <b>20</b>  |
| SSC/N8245<br>Develop tools, processes and mechanisms for continuous integration and delivery for IoT Solutions | PC1. Map IoT device types communication protocols and deployment scenarios to identify integration requirements                | 2            | 3               | -             | 1          |
|                                                                                                                | PC2. Identify hardware and software dependencies for IoT development and deployment                                            | 2            | 3               | -             | 1          |
|                                                                                                                | PC3. Define goals for CI/CD such as rapid updates secure deployments and scalability                                           | 2            | 3               | -             | 1          |
|                                                                                                                | PC4. Evaluate and select CI CD tools compatible with IoT including version control and containerization options                | 2            | 3               | -             | 1          |
|                                                                                                                | PC5. Integrate IoT-specific testing tools like simulators and hardware-in-the-loop testing into CI pipelines                   | 2            | 3               | -             | 1          |
|                                                                                                                | PC6. Develop scripts to automate code compilation firmware image generation and signing                                        | 2            | 3               | -             | 1          |
|                                                                                                                | PC7. Incorporate static code analysis security checks and security scanning into build and deployment processes                | 2            | 3               | -             | 1          |
|                                                                                                                | PC8. Create automated test scripts for unit integration and system testing including hardware-in-the-loop tests                | 2            | 3               | -             | 1          |
|                                                                                                                | PC9. Automate firmware software deployment and use OTA mechanisms for deployment to real devices                               | 2            | 3               | -             | 1          |
|                                                                                                                | PC10. Implement phased rollouts with rollback capabilities and integrate monitoring tools for device health and logs           | 2            | 3               |               | 1          |
|                                                                                                                | PC11. Set up alerts for failures and anomalies and develop feedback loops to improve testing and code quality                  | 2            | 4               |               | 2          |
|                                                                                                                | PC12. Automate configuration management for different environments and maintain consistent versioning of firmware and software | 2            | 4               |               | 2          |
|                                                                                                                | PC13. Document CI CD workflows scripts and configurations along with SOPs for failures and updates                             | 2            | 4               |               | 2          |
|                                                                                                                | PC14. Run pilot pipelines on small IoT projects refine processes and plan gradual scaling                                      | 2            | 4               |               | 2          |
|                                                                                                                | PC15. Collect data analyze results and automate additional testing for broader IoT deployments                                 | 2            | 4               |               | 2          |
|                                                                                                                | <b>Total Marks</b>                                                                                                             | <b>30</b>    | <b>50</b>       | <b>-</b>      | <b>20</b>  |
| SSC/N8224<br>Develop simulations and manage tests for end-to-end IoT solutions                                 | PC1. Simulate the IoT solution during development to gain early feedback and support rapid prototyping and scaling             | 3            | 5               | -             | 2          |
|                                                                                                                | PC2. Use simulations to manage end to end testing and ensure interoperability of IoT components and communications             | 3            | 5               | -             | 2          |
|                                                                                                                | PC3. Test device discovery communication processes and performance metrics such as battery life and signal strength            | 3            | 5               | -             | 2          |
|                                                                                                                | PC4. Perform functional and interoperability testing of device firmware and hardware                                           | 3            | 5               | -             | 2          |

| NOS/Module Name                                                              | Assessment Criteria for Performance Criteria/Learning Outcomes                                                                            | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|---------------|------------|
|                                                                              | PC5. Test communication between devices and cloud services including multi-device and multi-protocol compliance                           | 3            | 5               | -             | 2          |
|                                                                              | PC6. Conduct remote diagnostics performance and security testing of the entire IoT solution                                               | 3            | 5               | -             | 2          |
|                                                                              | PC7. Test IoT platform functionalities including performance load testing and end to end solution validation for standards compliance     | 3            | 5               | -             | 2          |
|                                                                              | PC8. Verify interactions within modules and interfaces of the IoT solution to ensure proper integration and behavior                      | 3            | 5               | -             | 2          |
|                                                                              | PC9. Develop automation suites and infrastructure to execute UI API and device level tests efficiently                                    | 3            | 5               | -             | 2          |
|                                                                              | PC10. Ensure comprehensive testing through automation and perform functional and user experience assessments of the complete IoT solution | 3            | 5               | -             | 2          |
|                                                                              | <b>Total Marks</b>                                                                                                                        | <b>30</b>    | <b>50</b>       | <b>-</b>      | <b>20</b>  |
| SSC/N8244<br>Understand functional & non-functional testing of IoT solutions | PC1.Create or modify test scenarios and plans to cover all functional and non functional requirements of the IoT solution                 | 3            | 5               | -             | 2          |
|                                                                              | PC2.Identify and develop automated test cases and scripts relevant to functional performance and security testing                         | 3            | 5               | -             | 2          |
|                                                                              | PC3.Access or generate test data aligned with test scenarios and ensure data quality for comprehensive testing                            | 3            | 5               | -             | 2          |
|                                                                              | PC4.Execute test cases including functional load stress endurance spike scalability and chaos testing and evaluate outcomes               | 3            | 5               | -             | 2          |
|                                                                              | PC5.Validate test plans scripts and results with relevant stakeholders to ensure thorough coverage and accuracy                           | 3            | 5               | -             | 2          |
|                                                                              | PC6.Verify that individual module codes and the integrated IoT solution function as per specifications and business criteria              | 3            | 5               | -             | 2          |
|                                                                              | PC7.Gather user feedback and perform usability testing to improve the end user experience                                                 | 3            | 5               | -             | 2          |
|                                                                              | PC8.Conduct performance tests such as load stress endurance spike scalability and chaos testing to assess robustness and resilience       | 3            | 5               | -             | 2          |
|                                                                              | PC9.Ensure compliance of the IoT solution with all defined standards and business requirements through testing results                    | 3            | 5               | -             | 2          |
|                                                                              | PC10.Document testing processes outcomes and recommendations for continuous improvement and stakeholder communication                     | 3            | 5               | -             | 2          |
|                                                                              | <b>Total Marks</b>                                                                                                                        | <b>30</b>    | <b>50</b>       | <b>-</b>      | <b>20</b>  |
| SSC/N8238                                                                    | PC1. Identify the purpose and the scope of the activity for which technical documentation is to be produced                               | 5            | 11              | -             | 3          |
|                                                                              | PC2. obtain information for the technical document from relevant sources and stakeholders                                                 | 5            | 8               | -             | 3          |

| NOS/Module Name                                      | Assessment Criteria for Performance Criteria/Learning Outcomes                                | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------|-----------------|---------------|------------|
| Create technical documents and manuals               | PC3. draft technical document ensuring that content is concise, complete, and easy to consume | 5            | 8               | -             | 3          |
|                                                      | PC4. review technical document content with relevant stakeholders and document owners         | 3            | 4               | -             | 2          |
|                                                      | PC5. ensure that technical document is formatted and designed as per specifications           | 3            | 4               | -             | 3          |
|                                                      | PC6. transfer technical documents to relevant stakeholders for sign-off and publishing        | 3            | 4               | -             | 3          |
|                                                      | PC7. continuously review and update technical document                                        | 6            | 11              | -             | 3          |
|                                                      | <b>Total Marks</b>                                                                            | <b>30</b>    | <b>50</b>       | <b>-</b>      | <b>20</b>  |
| DGT/VSQ/ N0102<br>Employability Skills<br>(60 Hours) | PC1.Introduction to Employability Skills                                                      | 1            | 1               | -             | -          |
|                                                      | PC2.Constitutional values – Citizenship                                                       | 1            | 1               | -             | -          |
|                                                      | PC3.Becoming a Professional in the 21st Century                                               | 2            | 4               | -             | -          |
|                                                      | PC4.Basic English Skills                                                                      | 2            | 3               | -             | -          |
|                                                      | PC5.Career Development & Goal Setting                                                         | 1            | 2               | -             | -          |
|                                                      | PC6.Communication Skills                                                                      | 2            | 2               | -             | -          |
|                                                      | PC7.Diversity & Inclusion                                                                     | 1            | 2               | -             | -          |
|                                                      | PC8.Financial and Legal Literacy                                                              | 2            | 3               | -             | -          |
|                                                      | PC9.Essential Digital Skills                                                                  | 3            | 4               | -             | -          |
|                                                      | PC10.Entrepreneurship                                                                         | 2            | 3               | -             | -          |
|                                                      | PC11.Customer Service                                                                         | 1            | 2               | -             | -          |
|                                                      | PC12.Getting Ready for Apprenticeship & Jobs                                                  | 2            | 3               | -             | -          |
|                                                      | <b>Total Marks</b>                                                                            | <b>20</b>    | <b>30</b>       | <b>-</b>      | <b>-</b>   |
| <b>Grand Total Marks</b>                             |                                                                                               | <b>200</b>   | <b>330</b>      | <b>-</b>      | <b>120</b> |

## Annexure: Assessment Strategy

### Assessment Process Overview

#### Batch Creation & Assessment Request:

Training Providers (TP) or Training Centers (TC), including any other authorized partner of Ministry/ Department create batches / push batches on the SIDH portal. Assessment requests are submitted through the SIDH portal or via email or other media as authorized from time to time. For NON-SIDH schemes, assessment requests are received electronically or through respective State Skill Mission portals. TP/TC initiates the assessment request through the InSDMS portal and processes the payment (where applicable).

#### Batch Alignment & Confirmation:

Upon payment confirmation, batches are assigned to the Assessment Agency based on factors like:

- Assessment readiness
- Availability of certified assessors for the specific job role
- Assessment capping to an assessment agency as prescribed from time to time for an AB An email communication / prescribed mode communication is sent to TP/TC for confirmation of the assessment date, with IT-ITeS SSC in the loop. Once confirmation is received, the Assessment Agency designates a TOA-certified assessor to conduct or facilitate the assessment.
- Batches are only formed when the Qualification is active.

**Candidate Verification & Assessment Execution:**

Candidate details are verified and documented at the beginning of the assessment by a certified assessor. A Quality Assurance (QA) mechanism is enforced, requiring an undertaking from the TC. Regular feedback is collected from TP/TC to ensure continuous improvement.

**Evidence Collection & Validation:**

Proctors or assessors capture date/time-stamped and geo-tagged photographs of the assessment location during the process. Attendance is also ensured offline. A PC-wise result analysis is conducted to refine assessment standards.

**Monitoring & Compliance:**

Batch monitoring follows established protocols, ensuring adherence to assessment guidelines. Sample based surprise visits are conducted at TC locations during both training and assessments to verify compliance. This structured approach ensures transparency, quality control, and validation throughout the assessment process.

**Testing Environment:**

- Check the Assessment location, date and time
- 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.

**Assessment Quality Assurance levels/Framework:**

IT-ITeS SSC nasscom is responsible for the development and periodic review of the question bank developed for a specific job role. We publish an openly accessible sample /model question paper on our website for all stakeholders. The quality of the Question Bank created by the assessment designer is validated by a Subject matter experts on the following parameters:

- Appropriateness of the Question Bank in terms of facts, data and information.

- Checks for grammar, spellings, scripting and formatting.
- The information provided should be specific enough to remove any ambiguity in answers/solutions to the question.
- Relevance – Assessing the topic well w.r.t. the job role.
- Check if the difficulty level of each question is as per the matrix.
- Check if the images used in the question are clear and relevant.
- All variables, symbols and abbreviations used must be declared.
- The correct answer option should be unique, and the options should not be overlapping

### 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.                                                                                                                             |