



## **QUALIFICATION FILE**

### **Microbiologist (Food)**

☒ Short Term Training (STT) ☐ Long Term Training (LTT) ☐ Apprenticeship

☒ Upskilling ☐ Dual/Flexi Qualification ☒ For ToT ☒ For ToA

☒ General ☐ Multi-skill (MS) ☐ Cross Sectoral (CS) ☐ Future Skills ☐ OEM

**NCrF/NSQF Level: 5.0**

**Submitted By:**

**Food Industry Capacity and Skill Initiative (FICSI)**

**Shriram Bharatiya Kala Kendra, 3rd floor**

**1, Copernicus Marg, Mandi House, New Delhi- 110001**

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## Section 1: Basic Details

| 1.     | <b>Qualification Name</b>                                                                                                                                                             | Microbiologist (Food)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                |        |                                                                    |                                                           |    |                                                                 |                                                                           |    |                                                   |                                                                  |    |                                                   |                                                                    |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------|--------------------------------------------------------------------|-----------------------------------------------------------|----|-----------------------------------------------------------------|---------------------------------------------------------------------------|----|---------------------------------------------------|------------------------------------------------------------------|----|---------------------------------------------------|--------------------------------------------------------------------|
| 2.     | <b>Sector/s</b>                                                                                                                                                                       | Food Processing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                |        |                                                                    |                                                           |    |                                                                 |                                                                           |    |                                                   |                                                                  |    |                                                   |                                                                    |
| 3.     | <b>Type of Qualification:</b> <input type="checkbox"/> New <input checked="" type="checkbox"/> Revised <input type="checkbox"/> Has Electives/Options<br><input type="checkbox"/> OEM | <b>NQR Code &amp; version of existing/previous qualification:</b> 2021/FI/FICSI/04805, v3.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Qualification Name of existing/previous version:</b><br>Food Microbiologist |        |                                                                    |                                                           |    |                                                                 |                                                                           |    |                                                   |                                                                  |    |                                                   |                                                                    |
| 4.     | <b>a. OEM Name</b><br><b>b. Qualification Name</b><br>(Wherever applicable)                                                                                                           | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                |        |                                                                    |                                                           |    |                                                                 |                                                                           |    |                                                   |                                                                  |    |                                                   |                                                                    |
| 5.     | <b>National Qualification Register (NQR) Code &amp;Version</b><br>(Will be issued after NSQC approval)                                                                                | QG-05-FI-03894-2025-V2-FICSI & version 4.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>6. NCrF/NSQF Level:</b> 5.0                                                 |        |                                                                    |                                                           |    |                                                                 |                                                                           |    |                                                   |                                                                  |    |                                                   |                                                                    |
| 7.     | <b>Award (Certificate/Diploma/Advance Diploma/ Any Other (Wherever applicable specify multiple entry/exits also &amp; provide details in annexure)</b>                                | Certificate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                |        |                                                                    |                                                           |    |                                                                 |                                                                           |    |                                                   |                                                                  |    |                                                   |                                                                    |
| 8.     | <b>Brief Description of the Qualification</b>                                                                                                                                         | A Microbiologist (Food) is responsible for analyzing and monitoring the microbial quality of food products to ensure safety and compliance with regulatory standards. The individual conducts various microbiological tests, including advanced techniques such as Enzyme-Linked Immunosorbent Assay (ELISA) and Polymerase Chain Reaction (PCR), to detect both pathogenic and non-pathogenic organisms. The role involves designing and implementing food safety protocols, troubleshooting contamination issues, and collaborating with production and quality teams to improve hygiene practices and product quality.                                                                                                                                                                                                          |                                                                                |        |                                                                    |                                                           |    |                                                                 |                                                                           |    |                                                   |                                                                  |    |                                                   |                                                                    |
| 9.     | <b>Eligibility Criteria for Entry for Student/Trainee/Learner/Employee</b>                                                                                                            | <b>a. Entry Qualification &amp; Relevant Experience:</b> <table border="1"> <thead> <tr> <th>S. No.</th> <th>Academic/Skill Qualification (with Specialization - if applicable)</th> <th>Required Experience (with Specialization - if applicable)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>UG Diploma (in Food Science or Microbiology or Applied Science)</td> <td>3 years of relevant experience in Food Quality Testing or Quality Control</td> </tr> <tr> <td>2.</td> <td>Previous relevant qualification of NSQF Level 4.5</td> <td>3 years of experience in Food Quality Testing or Quality Control</td> </tr> <tr> <td>3.</td> <td>Previous relevant Qualification of NSQF Level 4.0</td> <td>4.5 years of experience in Food Quality Testing or Quality Control</td> </tr> </tbody> </table><br><b>b. Age:</b> NA |                                                                                | S. No. | Academic/Skill Qualification (with Specialization - if applicable) | Required Experience (with Specialization - if applicable) | 1. | UG Diploma (in Food Science or Microbiology or Applied Science) | 3 years of relevant experience in Food Quality Testing or Quality Control | 2. | Previous relevant qualification of NSQF Level 4.5 | 3 years of experience in Food Quality Testing or Quality Control | 3. | Previous relevant Qualification of NSQF Level 4.0 | 4.5 years of experience in Food Quality Testing or Quality Control |
| S. No. | Academic/Skill Qualification (with Specialization - if applicable)                                                                                                                    | Required Experience (with Specialization - if applicable)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                |        |                                                                    |                                                           |    |                                                                 |                                                                           |    |                                                   |                                                                  |    |                                                   |                                                                    |
| 1.     | UG Diploma (in Food Science or Microbiology or Applied Science)                                                                                                                       | 3 years of relevant experience in Food Quality Testing or Quality Control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                |        |                                                                    |                                                           |    |                                                                 |                                                                           |    |                                                   |                                                                  |    |                                                   |                                                                    |
| 2.     | Previous relevant qualification of NSQF Level 4.5                                                                                                                                     | 3 years of experience in Food Quality Testing or Quality Control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                |        |                                                                    |                                                           |    |                                                                 |                                                                           |    |                                                   |                                                                  |    |                                                   |                                                                    |
| 3.     | Previous relevant Qualification of NSQF Level 4.0                                                                                                                                     | 4.5 years of experience in Food Quality Testing or Quality Control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                |        |                                                                    |                                                           |    |                                                                 |                                                                           |    |                                                   |                                                                  |    |                                                   |                                                                    |
| 10.    | <b>Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</b>                                                                        | 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>11. Common Cost Norm Category (I/II/III) (wherever applicable):</b> I       |        |                                                                    |                                                           |    |                                                                 |                                                                           |    |                                                   |                                                                  |    |                                                   |                                                                    |

| 12.                     | <b>Any Licensing requirements for Undertaking Training on This Qualification</b> (wherever applicable)                                                                     | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                         |                         |                   |                       |                         |               |                     |     |     |     |  |     |        |  |  |  |  |  |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------|-------------------|-----------------------|-------------------------|---------------|---------------------|-----|-----|-----|--|-----|--------|--|--|--|--|--|
| 13.                     | <b>Training Duration by Modes of Training Delivery</b> (Specify <i>Total Duration</i> as per selected training delivery modes and as per requirement of the qualification) | <div> <input checked="" type="checkbox"/>Offline   <input type="checkbox"/>Online   <input type="checkbox"/>Blended </div> <table border="1"> <thead> <tr> <th>Training Delivery Modes</th> <th>Theory (Hours)</th> <th>Practical (Hours)</th> <th>OJT Mandatory (Hours)</th> <th>OJT Recommended (Hours)</th> <th>Total (Hours)</th> </tr> </thead> <tbody> <tr> <td>Classroom (offline)</td> <td>190</td> <td>200</td> <td>120</td> <td></td> <td>510</td> </tr> <tr> <td>Online</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>(Refer Blended Learning Annexure for details)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Training Delivery Modes | Theory (Hours)          | Practical (Hours) | OJT Mandatory (Hours) | OJT Recommended (Hours) | Total (Hours) | Classroom (offline) | 190 | 200 | 120 |  | 510 | Online |  |  |  |  |  |
| Training Delivery Modes | Theory (Hours)                                                                                                                                                             | Practical (Hours)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | OJT Mandatory (Hours)   | OJT Recommended (Hours) | Total (Hours)     |                       |                         |               |                     |     |     |     |  |     |        |  |  |  |  |  |
| Classroom (offline)     | 190                                                                                                                                                                        | 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 120                     |                         | 510               |                       |                         |               |                     |     |     |     |  |     |        |  |  |  |  |  |
| Online                  |                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |                         |                   |                       |                         |               |                     |     |     |     |  |     |        |  |  |  |  |  |
| 14.                     | <b>Aligned to NCO/ISCO Code/s</b> (if no code is available mention the same)                                                                                               | NCO-2015/3116.0200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                         |                         |                   |                       |                         |               |                     |     |     |     |  |     |        |  |  |  |  |  |
| 15.                     | <b>Progression path after attaining the qualification</b> (Please show Professional and Academic progression)                                                              | <div> <div>Microbiologist (Food) (L5)</div> <div>→</div> <div>Lab In-charge (Microbiology) (L6)</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |                         |                   |                       |                         |               |                     |     |     |     |  |     |        |  |  |  |  |  |
| 16.                     | <b>Other Indian languages in which the Qualification &amp; Model Curriculum are being submitted</b>                                                                        | Hindi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                         |                         |                   |                       |                         |               |                     |     |     |     |  |     |        |  |  |  |  |  |
| 17.                     | <b>Is similar Qualification(s) available on NQR-if yes, justification for this qualification</b>                                                                           | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No URLs of similar Qualifications:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                         |                         |                   |                       |                         |               |                     |     |     |     |  |     |        |  |  |  |  |  |
| 18.                     | <b>Is the Job Role Amenable to Persons with Disability</b>                                                                                                                 | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No<br>If "Yes", specify applicable type of Disability:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |                         |                   |                       |                         |               |                     |     |     |     |  |     |        |  |  |  |  |  |
| 19.                     | <b>How Participation of Women will be Encouraged</b>                                                                                                                       | <p>The food processing sector has witnessed significant participation of women at the household level. FICSI aims to further enhance this by providing targeted training programs for women entrepreneurs in various food processing activities. By equipping women with the necessary skills and knowledge, FICSI encourages them to start their own ventures and contributes to their economic empowerment.</p> <p>To support these initiatives, FICSI will offer handholding support for setting up businesses, ensuring that women have the guidance and resources they need to succeed. Additionally, FICSI proposes to upskill self-help groups through specialized training and capacity-building programs. These efforts aim to provide enhanced livelihood opportunities and foster entrepreneurial qualities among the beneficiaries, thereby increasing women's participation in the food processing sector.</p> <p>Furthermore, FICSI plans to undertake projects aimed at upskilling street food vendors, providing them with better livelihood opportunities and inculcating entrepreneurial qualities. FICSI is committed to creating an</p> |                         |                         |                   |                       |                         |               |                     |     |     |     |  |     |        |  |  |  |  |  |

|     |                                                                                                                                     |                                                                                                                                                                                        |                                  |
|-----|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
|     |                                                                                                                                     | inclusive environment that supports and encourages the participation of women in various job roles within the food processing industry.                                                |                                  |
| 20. | Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)                                   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No<br>(DGT/VSQ/N0102)                                                                                                 |                                  |
| 21. | Is Qualification Suitable to be Offered in Schools/Colleges                                                                         | Schools <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   Colleges <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                             |                                  |
| 22. | Name and Contact Details of Submitting / Awarding Body SPOC (In case of CS or MS, provide details of both Lead AB & Supporting ABs) | Name: Mr. Sunil K Marwah<br>Email: <a href="mailto:admin@ficsi.in">admin@ficsi.in</a><br>Website: <a href="https://www.ficsi.in/">https://www.ficsi.in/</a><br>Contact No.: 9711260230 |                                  |
| 23. | Final Approval Date by NSQC: 18-02-2025                                                                                             | 24. Validity Duration: 3 Years                                                                                                                                                         | 25. Next Review Date: 17-02-2028 |

## 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 Training **Man.**-Mandatory **Rec.**-Recommended **Proj.**-Project

| S. No                                    | NOS/Module Name                                      | NOS/Module Code & Version<br>(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.                                       | Prepare and maintain the work area and lab equipment | FIC/N7609, v2.0                              | Core           | 5.0              | 7                   | 60                        | 90         | 60         | -        | 210        | 30               | 50         | -     | 20        | 100        | 35                            |
| 2.                                       | Carry out microbiological analysis of food products  | FIC/N7610, v2.0                              | Core           | 5.0              | 7                   | 60                        | 90         | 60         | -        | 210        | 30               | 50         | -     | 20        | 100        | 35                            |
| 3.                                       | Apply Food Safety and Hygiene in the laboratory      | FIC/N9907, v3.0                              | Core           | 3.5              | 1                   | 10                        | 20         | -          | -        | 30         | 30               | 70         | -     | 15        | 115        | 20                            |
| 4.                                       | Employability Skills (60 Hours)                      | DGT/VSQ/N0102, v1.0                          | Non-Core       | 4.0              | 2                   | 60                        | -          | -          | -        | 60         | 20               | 30         | -     | -         | 50         | 10                            |
| <b>Duration (in Hours) / Total Marks</b> |                                                      |                                              |                |                  | <b>17</b>           | <b>190</b>                | <b>200</b> | <b>120</b> |          | <b>510</b> | <b>110</b>       | <b>200</b> |       | <b>55</b> | <b>365</b> | <b>100</b>                    |

### Assessment - Minimum Qualifying Percentage

Please specify **any one** of the following:

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

**Minimum Pass Percentage – NOS/Module-wise: 70 %** (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)</b> <i>(as per NCVET guidelines)</i>        | B.Sc./B.Tech in Food Technology/ Food Science/Microbiology/Biotechnology/Biochemistry with 3 years of experience in Microbiology and 1 year of experience in Training of Microbiologist (Food)<br>OR<br>M.Sc./M.Tech in Food Technology/Food Science /Microbiology/Biotechnology/Biochemistry with 2 years of experience in Microbiology and 1 year of experience in Training of Microbiologist (Food)          |
| 2. | <b>Master Trainer's Qualification and experience in the relevant sector (in years)</b> <i>(as per NCVET guidelines)</i> | B.Sc./B.Tech in Food Technology/Food Science /Microbiology/Biotechnology/Biochemistry with 5 years of experience in Food Microbiology and 1 year of experience in Training of Microbiologist (Food)<br>OR<br>M.Sc./M.Tech in Food Technology/Food Science Microbiology/Biotechnology/Biochemistry with 4 years of experience in Food Microbiology and 1 year of experience in Training of Microbiologist (Food) |
| 3. | <b>Tools and Equipment Required for Training</b>                                                                        | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>(If "Yes", details to be provided in Annexure)</i>                                                                                                                                                                                                                                                                                       |
| 4. | <b>In Case of Revised Qualification, Details of Any Upskilling Required for Trainer</b>                                 | NA                                                                                                                                                                                                                                                                                                                                                                                                              |

### Section 4: Assessment Related

|    |                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                        |
|----|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | <b>Assessor's Qualification and experience in relevant sector (in years)</b> <i>(as per NCVET guidelines)</i>                | B.Sc./B.Tech in Food Technology/Food Science/ Microbiology/Biotechnology/Biochemistry with 4 years of experience in Food Microbiology and 1 year of experience in Assessment of Microbiologist (Food)<br>OR<br>M.Sc./M.Tech in Food Technology/Microbiology/Biotechnology/Biochemistry with 3 years of experience in Food Microbiology and 1 year of experience in Assessment of Microbiologist (Food) |
| 2. | <b>Proctor's Qualification and experience in relevant sector (in years)</b> <i>(as per NCVET guidelines)</i>                 | B.Sc./B.Tech in Food Technology/Microbiology/Biotechnology/Biochemistry with 4 years of experience in Food Microbiology and 1 year of experience in Assessment of Microbiologist (Food)<br>OR<br>M.Sc./M.Tech in Food Technology/Microbiology/Biotechnology/Biochemistry with 3 years of experience in Food Microbiology and 1 year of experience in Assessment of Microbiologist (Food)               |
| 3. | <b>Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)</b> <i>(as per NCVET guidelines)</i> | B.Sc./B.Tech in Food Technology/Microbiology/Biotechnology/Biochemistry with 6 years of experience in Food Microbiology and 1 year of experience in Assessment of Microbiologist (Food)<br>OR<br>M.Sc./M.Tech in Food Technology/Microbiology/Biotechnology/Biochemistry with 5 years of experience in Food Microbiology and 1 year of experience in Assessment of Microbiologist (Food)               |
| 4. | <b>Assessment Mode</b> <i>(Specify the assessment mode)</i>                                                                  | Offline                                                                                                                                                                                                                                                                                                                                                                                                |
| 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. | <b>Latest Skill Gap Study (not older than 2 years) (Yes/No):</b> No                                                                                       |
| 2. | <b>Latest Market Research Reports or any other source (not older than 2 years) (Yes/No):</b> No                                                           |
| 3. | <b>Government /Industry initiatives/ requirement (Yes/No):</b> No                                                                                         |
| 4. | <b>Number of Industry validation provided:</b> 21                                                                                                         |
| 5. | <b>Estimated nos. of persons to be trained and employed:</b> 750                                                                                          |
| 6. | <b>Evidence of Concurrence/Consultation with Line Ministry/State Departments:</b> <i>This is an old QP. We have Ministry concurrence</i><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 level/NSQF descriptors (Mandatory)                      | Attached |
| 2.  | <b>Annexure:</b> List of tools and equipment relevant for qualification (Mandatory, except in case of online course) | Attached |
| 3.  | <b>Annexure:</b> Detailed Assessment Criteria (Mandatory)                                                            | Attached |
| 4.  | <b>Annexure:</b> Assessment Strategy (Mandatory)                                                                     | Attached |
| 5.  | <b>Annexure:</b> Blended Learning (Mandatory, in case selected Mode of delivery is “Blended Learning”)               | NA       |
| 6.  | <b>Annexure:</b> Multiple Entry-Exit Details (Mandatory, in case qualification has multiple Entry-Exit)              | NA       |
| 7.  | <b>Annexure:</b> Acronym and Glossary (Optional)                                                                     | Attached |
| 8.  | <b>Supporting Document:</b> Model Curriculum (Mandatory – Public view)                                               | Attached |
| 9.  | <b>Supporting Document:</b> Career Progression (Mandatory - Public view)                                             | Attached |
| 10. | <b>Supporting Document:</b> Occupational Map (Mandatory)                                                             | Attached |
| 11. | <b>Supporting Document:</b> Assessment SOP (Mandatory)                                                               | Attached |
| 12. | <b>Any other document you wish to submit:</b>                                                                        | No       |

## Annexure 1: Evidence of Level

| NCrF/NSQF Level Descriptors                | Key requirements of the job role/ outcome of the qualification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | How the job role/ outcomes relates to the NCrF/NSQF level descriptor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NCrF/NSQF Level |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Professional Theoretical Knowledge/Process | <p><b>The work requires familiar, predictable routines and situations with clear choices.</b></p> <p><b>Preparation for Laboratory Operations</b></p> <ul style="list-style-type: none"> <li>Set up and calibrate laboratory equipment.</li> <li>Prepare work areas for testing, ensuring all tools and materials are sanitized.</li> <li>Follow protocols for sample collection and preservation.</li> </ul> <p><b>Conducting Microbiological Analysis</b></p> <ul style="list-style-type: none"> <li>Perform microbiological tests (e.g., ELISA, PCR, culturing).</li> <li>Perform biochemical and serological tests on pure cultures.</li> <li>Perform TPC tests to quantify total microbial load</li> <li>Analyze food samples for the presence of pathogens and contaminants.</li> <li>Interpret and report test results in compliance with safety and quality standards.</li> </ul> <p><b>Implementing Food Safety Protocols</b></p> <ul style="list-style-type: none"> <li>Follow Good Manufacturing Practices (GMP), Good Hygiene Practices (GHP), and HACCP in lab operations.</li> <li>Ensure lab cleanliness and maintain hygiene protocols to prevent cross-contamination.</li> <li>Apply food safety guidelines as per ISO 22000, FSSAI, and other standards during lab work.</li> </ul> <p><b>Laboratory Quality Control and Management</b></p> <ul style="list-style-type: none"> <li>Monitor lab processes to ensure accuracy and consistency in test results.</li> <li>Document and report test outcomes, maintaining traceability and quality standards.</li> <li>Manage laboratory data, prepare reports, and analyze trends to improve accuracy.</li> </ul> <p><b>Maintaining Laboratory Equipment and Facilities</b></p> | <p>A Microbiologist (Food) must have advanced knowledge of microbiological testing processes, sample handling, and laboratory safety in food analysis. They should be well-versed in the cultivation, isolation, and identification of microorganisms in food products, using techniques such as PCR, ELISA, and culture methods. The role requires a deep understanding of food safety standards, such as HACCP, FSSAI, and ISO 17025, as well as global regulations governing food testing and hygiene protocols. This expertise ensures accurate testing, compliance with safety standards, and the prevention of foodborne hazards in food production and processing environments.</p> <p>Hence, it falls under Level 5.</p> | 5.0             |

|                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
|                                                                             | <ul style="list-style-type: none"> <li>Perform routine maintenance and calibration of laboratory equipment.</li> <li>Monitor and maintain cleanliness and functionality of lab areas.</li> <li>Ensure proper storage and handling of chemicals, reagents, and samples.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |
| <b>Professional and Technical Skills/ Expertise/ Professional Knowledge</b> | <p>Specialized knowledge of field of employment or study</p> <ul style="list-style-type: none"> <li>Understanding of microbiological testing methods, including advanced techniques like PCR, ELISA, and microbial culturing for food safety and quality analysis.</li> <li>Knowledge of foodborne pathogens, such as Salmonella, Listeria, and E. coli, as well as beneficial microorganisms like probiotics and their implications in food safety.</li> <li>Know how to implement and maintain laboratory safety protocols, including the use of Personal Protective Equipment (PPE) and biosafety standards to prevent contamination and hazards.</li> <li>Understanding of disinfection and sterilization procedures in a laboratory setting to ensure aseptic conditions during food testing.</li> <li>Knowledge of food safety standards and regulations, including FSSAI, ISO 22000, HACCP, and GMP, relevant to food microbiological testing.</li> <li>Know how to perform microbiological analyses on food products, including sample preparation, culturing, and identifying microorganisms.</li> <li>Understanding of allergen management strategies and cross-contact prevention measures in microbiological testing environments.</li> <li>Knowledge of equipment maintenance and calibration procedures, ensuring accuracy and precision in microbiological testing instruments.</li> <li>Know how to document and maintain lab records, ensuring compliance with quality assurance and traceability standards for food microbiology testing.</li> <li>Understanding of stock rotation methods like FIFO and FEFO, and storage protocols to prevent contamination or spoilage in raw materials and finished products.</li> </ul> | <p>A Microbiologist (Food) should possess a comprehensive set of advanced cognitive, professional, and technical skills crucial for performing and overseeing complex microbiological analyses. This includes preparing and maintaining laboratory equipment, conducting thorough microbiological testing of food products, and implementing food safety and hygiene protocols. The role requires skills in data interpretation, microbial risk assessment, and process validation to ensure food safety and compliance with health regulations. Expertise in laboratory techniques, problem-solving, and effective communication is essential to collaborate with cross-functional teams and drive improvements in food microbiology practices.</p> <p>Hence, it falls under Level 5.</p> | 5.0 |
| <b>Employment Readiness &amp; Entrepreneurship</b>                          | <p>The participant should be able to:</p> <ul style="list-style-type: none"> <li>Apply critical thinking skills to identify and resolve microbiological issues in food products.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | A Microbiologist (Food) must demonstrate a proactive mindset, strong attention to detail, and the ability to adapt to the dynamic and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5.0 |

|                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Skills &amp; Mind-set/Professional Skill</b> | <ul style="list-style-type: none"> <li>Implement food safety protocols and quality control measures in compliance with industry standards.</li> <li>Adapt to evolving food safety regulations and emerging microbiological testing techniques.</li> <li>Manage lab resources efficiently, ensuring the proper use and maintenance of equipment and materials.</li> <li>Demonstrate effective communication skills when presenting test results or collaborating with cross-functional teams.</li> <li>Collaborate with production and quality assurance teams to ensure microbiological safety in the entire food processing chain.</li> <li>Conduct thorough risk assessments for microbial contamination and recommend preventive actions.</li> <li>Lead efforts in maintaining lab hygiene and biohazard safety standards to create a safe working environment.</li> <li>Organize and manage laboratory documentation, ensuring accuracy and compliance with audit standards.</li> <li>Develop innovative solutions to improve food safety and reduce contamination risks in food testing.</li> <li>Train lab personnel on best practices in microbiological testing and safety protocols.</li> <li>Evaluate new opportunities for process improvement and innovation within the lab setting to enhance testing efficiency and accuracy.</li> </ul> | <p>unpredictable nature of the food industry. The role requires advanced analytical skills to interpret microbiological data and trends, developing innovative solutions to complex microbiological challenges. Effective leadership, communication, and interpersonal skills are critical for working with diverse teams, influencing stakeholders, and promoting a culture of food safety and quality throughout the organization.</p> <p>Therefore, this job role is considered at Level 5.</p>                                                                                                                         |     |
| <b>Broad Learning Outcomes/Core Skill</b>       | <p><b>Advanced communication, cognitive, and contextual skills.</b></p> <p>The job holder is expected to communicate complex and specialized information clearly and effectively, both in written and oral forms, to diverse stakeholders, including cross-functional teams, senior management, and external partners. They must possess advanced analytical and problem-solving skills, be capable of interpreting and presenting data and insights to drive informed decision-making, and demonstrate proficiency in project management and strategic planning.</p> <p>They should be skilled in advanced arithmetic, statistical analysis, and understanding complex systems, as well as applying these skills to optimize processes, enhance quality, and ensure compliance with standards.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>The Microbiologist (Food) applies advanced theoretical knowledge and specialized skills in a complex and variable laboratory environment to ensure compliance with microbiological safety standards. They are responsible for monitoring and evaluating critical microbial parameters, conducting internal audits, and implementing corrective and preventive measures in food safety. The role involves assessing the implications of emerging trends, regulations, and technologies in food microbiology and making strategic decisions to enhance food safety and quality.</p> <p>Hence, it falls under Level 5.</p> | 5.0 |
| <b>Responsibility</b>                           | <p><b>Responsibility for own work and learning.</b></p> <ul style="list-style-type: none"> <li>Prepare for microbiological testing</li> <li>Maintain the sample records</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>At NSQF Level 5, a Microbiologist (Food) holds a senior technical role responsible for managing microbiological safety programs and laboratory</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5.0 |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  | <ul style="list-style-type: none"> <li>• Calibrate the maintain the lab equipment</li> <li>• Maintain a clean and sterile lab environment</li> <li>• Perform swab checks for hygiene monitoring</li> <li>• Process microbiological samples and perform microscopy</li> <li>• Cultivate and isolate microorganisms</li> <li>• Perform microbiological tests and interpret results</li> <li>• Adhere to laboratory safety and quality standards</li> <li>• Perform advanced microbiological tests and interpret results</li> <li>• Apply appropriate techniques to cultivate and isolate microorganisms</li> <li>• Implement food lab safety and sanitation protocols</li> <li>• Apply advanced food safety practices in lab testing</li> </ul> | <p>practices in food processing units. The microbiologist is accountable for planning, resourcing, and overseeing laboratory activities, including microbiological analyses, compliance checks, and risk assessments. They lead a team of laboratory professionals, setting performance standards and ensuring that all processes meet the highest microbiological safety benchmarks.</p> <p>Hence, it falls under Level 5.</p> |  |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

## Annexure 2: Tools and Equipment (Lab Set-Up)

### List of Tools and Equipment

Batch Size: 30

| S. No. | Tool / Equipment Name             | Specification | Quantity for specified Batch size |
|--------|-----------------------------------|---------------|-----------------------------------|
| 1.     | Agar Plates                       | Nos           | 100                               |
| 2.     | Nutrient Broth                    | Litres        | 30                                |
| 3.     | Culture Media (e.g., Agar, Broth) | Litres        | 30                                |
| 4.     | Sterile Solutions                 | Litres        | 15                                |
| 5.     | Peptone Water                     | Litres        | 15                                |
| 6.     | Sterile Diluent                   | Litres        | 10                                |
| 7.     | Sterile Media                     | Litres        | 20                                |
| 8.     | Sterile Storage Containers        | Nos           | 30                                |
| 9.     | Sterilizing Tools                 | Nos           | 10                                |
| 10.    | Sterile Sample Bags               | Nos           | 150                               |
| 11.    | Sterile Swabs                     | Nos           | 300                               |
| 12.    | Sterile Forceps                   | Nos           | 30                                |
| 13.    | Sterile Tubes                     | Nos           | 150                               |
| 14.    | Sterile Workbenches               | Nos           | 5                                 |
| 15.    | Sterile Cleaning Supplies         | Set           | 10                                |
| 16.    | Biochemical Test Kits             | Kit           | 10                                |
| 17.    | ELISA Kits                        | Kit           | 10                                |
| 18.    | PCR Kits                          | Kit           | 10                                |
| 19.    | qPCR Machines                     | Nos           | 3                                 |
| 20.    | Thermal Cyclers                   | Nos           | 3                                 |

|     |                                                |        |     |
|-----|------------------------------------------------|--------|-----|
| 21. | DNA Extraction Kits                            | Kit    | 30  |
| 22. | Gel Electrophoresis Equipment                  | Set    | 5   |
| 23. | Colony Counters                                | Nos    | 5   |
| 24. | Staining Kits                                  | Nos    | 10  |
| 25. | Selective and Differential Media               | Litres | 10  |
| 26. | CFU Estimation Charts                          | Nos    | 30  |
| 27. | Incubators                                     | Nos    | 5   |
| 28. | Autoclave                                      | Nos    | 2   |
| 29. | Microscope                                     | Nos    | 15  |
| 30. | Multimeter                                     | Nos    | 5   |
| 31. | Laboratory Balance                             | Nos    | 5   |
| 32. | UV Sterilizer                                  | Nos    | 1   |
| 33. | Chemical Sterilizers                           | Nos    | 1   |
| 34. | Refrigerated Storage Units                     | Nos    | 1   |
| 35. | Bunsen Burner                                  | Nos    | 15  |
| 36. | Glassware (e.g., Beakers, Graduated Cylinders) | Set    | 150 |
| 37. | Pipettes                                       | Nos    | 60  |
| 38. | Micropipettes                                  | Nos    | 30  |
| 39. | Flasks                                         | Nos    | 150 |
| 40. | Test Tubes                                     | Nos    | 150 |
| 41. | Petri Dishes                                   | Nos    | 150 |
| 42. | Microscope Slides                              | Nos    | 300 |
| 43. | Coverslips                                     | Nos    | 300 |
| 44. | pH Meters                                      | Nos    | 5   |
| 45. | Thermometer                                    | Nos    | 5   |
| 46. | Pressure Gauge                                 | Nos    | 3   |
| 47. | Cleaning Agents                                | Litres | 10  |
| 48. | Sanitizers                                     | Litres | 5   |
| 49. | Disinfectants                                  | Litres | 10  |
| 50. | Biohazard Waste Bins                           | Nos    | 10  |
| 51. | Hazardous Waste Disposal Containers            | Nos    | 5   |
| 52. | Spill Kits                                     | Nos    | 5   |
| 53. | Safety Data Sheets (SDS)                       | Nos    | 30  |
| 54. | First Aid Kits                                 | Nos    | 2   |
| 55. | Reagent Bottles                                | Nos    | 100 |
| 56. | Eyewash Station                                | Nos    | 1   |
| 57. | Fire Extinguisher                              | Nos    | 2   |
| 58. | Sample Labels                                  | Nos    | 300 |
| 59. | Sample Collection Tools                        | Nos    | 30  |

|     |                                                                |      |             |
|-----|----------------------------------------------------------------|------|-------------|
| 60. | Food Sample Storage Containers                                 | Nos  | 30          |
| 61. | Storage Racks                                                  | Nos  | 5           |
| 62. | Labeling Supplies                                              | Nos  | 5           |
| 63. | Packaging Materials                                            | Sets | As Required |
| 64. | Sample Disposal Bags                                           | Nos  | 300         |
| 65. | Safety Signs                                                   | Nos  | 10          |
| 66. | Standard Operating Procedures (SOP) Manuals                    | Nos  | 30          |
| 67. | Calibration Weights                                            | Sets | 5           |
| 68. | Calibration Solutions                                          | Sets | 5           |
| 69. | Tweezers                                                       | Nos  | 30          |
| 70. | Forceps                                                        | Nos  | 30          |
| 71. | Screwdrivers                                                   | Nos  | 5           |
| 72. | Safety Checklists                                              | Nos  | 30          |
| 73. | Audit Forms                                                    | Nos  | 30          |
| 74. | Incident Reporting Forms                                       | Nos  | 30          |
| 75. | Safety Gloves                                                  | Pair | 300         |
| 76. | Lab Coats                                                      | Nos  | 30          |
| 77. | Safety Goggles                                                 | Nos  | 30          |
| 78. | Safety Masks                                                   | Pair | 300         |
| 79. | Heat-Resistant Gloves                                          | Nos  | 5           |
| 80. | PPE Kit Contents (Gloves, Goggles, Lab Coats, Masks, Hairnets) | Set  | 30          |

#### Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Whiteboard
2. Projector
3. Computer/Laptop
4. Chairs
5. Tables
6. Whiteboard marker
7. Duster

### Annexure 3: Industry Validations Summary

Provide the summary information of all the industry validations in table. This is not required for OEM qualifications.

| S. No | Organization Name                   | Representative Name    | Designation                                        | Contact Address                                                                                  | Contact Phone No | E-mail ID                                                     | LinkedIn Profile (if available) |
|-------|-------------------------------------|------------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------|---------------------------------|
| 1     | Amity Institute of Food Technology  | Dr. Alok Saxena        | Associate Professor                                | Amity University Uttar Pradesh I-1 Block, Fourth Floor, Sector-125, Noida 201313, India          | 9899690717       | asaxena3@amity.edu                                            |                                 |
| 2     | Ruhi Corporation                    | Vaibhav Kumar Jain     | Chairman                                           | No. 7, Namkeen & Allied Food Cluster, Industrial Park, Karamdi Rd, Ratlam, Madhya Pradesh 457001 | 7771970097       | ruhicorp@gmail.com                                            |                                 |
| 3     | Hari Ram Masala Co.                 | Hemant Saini           | Owner                                              | Plot No 8 khewra Bahalgarh Road Sonipat Haryana - 131021                                         | 8070605111       | Info.hrmfoods@gmail.com                                       |                                 |
| 4     | Foodyaari Education & Media Pvt Ltd | Harish Vaishnav        | Co-Founder                                         | Plot.No.49; Mahalaxmi Colony Vinayak Nagar; Chahura. BK; Ahmednagar; Maharashtra; 414001         | 8308516485       | harish@foodyaari.co.in                                        |                                 |
| 5     | Perfetti Van Melle India Pvt. Ltd.  | Saurabh Gupta          | Manager Food Regulatory Affairs and Sustainability | 47th Milestone Delhi Jaipur Highway Village Manesar Gurgaon 1220050 Haryana                      | 9991123892       | saurav.gupta709@gmail.com, saurabh.gupta@perfettivanmelle.com |                                 |
| 6     | Freakat Foods Opc Pvt Ltd           | Rishabh Mahajan        | Director                                           | Plot no.2230, Phase ii, Sector 38, HSIIDC Rai, Industrial area, Sonipat-131029, Haryana          | 9996290209       | freakatfoods@gmail.com                                        |                                 |
| 7     | Kayem Foods Ind Pvt.Ltd.            | Rajender Kumar Sharma. | GM Operations & R&D                                | G.T Road Panipat ,132103                                                                         | 7206026011       | rajender.sharma@kayemfoods.in                                 |                                 |

|    |                                                  |                              |                                         |                                                                                                    |                       |                                                   |                                                                                                                             |
|----|--------------------------------------------------|------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 8  | Pravin Masalewale Pvt.Ltd (Suhana Masale)        | Hariom Bhargava              | Senior Territory Manager                | Hadapsar Industrial Estate ,Pune                                                                   | 9358887812            | hariom.bhargava@suhanaco.in                       |                                                                                                                             |
| 9  | DS Group (Dharampal Satyapal Group)              | Bikash Jain                  | Marketing Manager                       | C6-10 , Dharampal Satyapal DS Road,Sector 67 ,Noida 201309                                         | 9999009564            | bikash.jain@dsgroup.com                           |                                                                                                                             |
| 10 | Prahana Products Private Limited                 | Ms. Archana Devi Vijayaraman | Founder and CEO                         | Ground floor, Old no 18, new no 2A/6, Thiruvengadam Street, Kasturibai Nagar, Adyar Chennai 600020 | 9717262377            | archana@prahana.in                                |                                                                                                                             |
| 11 | Sahasra Food Consultancy                         | CH.Subramanyam               | CEO                                     | 25-6-79/1, Vijay Nagar Colony, Rahamatnagar, Kazipet, Telangana 506003                             | 9393406062/8884627255 | sahasra.chs@gmail.com                             | <a href="https://www.linkedin.com/in/su-bramanyamchinthalapati/">https://www.linkedin.com/in/su-bramanyamchinthalapati/</a> |
| 12 | Diamond Foods                                    | Anoop Tewari                 | Director                                | GF-20 Street 76 , Sector 76 Noida                                                                  | 9971190364            | anooptewari14@gmail.com, anooptewari14@rediff.com |                                                                                                                             |
| 13 | Mordip Food Industries                           | Kunal M.Funde                | Proprietor/Technical Head               | 102,Walani Road ,Asgaon, Tah Pauni District Bhandara-441910                                        | 9403373016            | kunalfunde94@gmail.com                            |                                                                                                                             |
| 14 | Auli Services Private Limited                    | Mohammad Anas                | Founder (Director)                      | Near Caramel School, Mussoorie road Chamba, Uttarakhand                                            | +91-9899877866        | dp65800@hotmail.com                               |                                                                                                                             |
| 15 | Marks and Spencer Reliance India Private Limited | Deepak Shivhare              | Head – Quality Assurance                | Gurugram, Haryana                                                                                  | +91 98200 56179       | deepak.shivhare@gmail.com                         |                                                                                                                             |
| 16 | Dhenki Foods Pvt. Ltd.                           | Md. Arifuzzaman              | Assistant Manager – Product Development | 4th Floor, Monibhandar Building, WEBEL Bhaban Sector V, Salt Lake, Kolkata – 700091                | 7003490034            | md.arifuzzaman@ingreens.in                        |                                                                                                                             |
| 17 | Shree Sharnam Spices                             | Aayush Chandaliya            | Chairperson & Partner                   | lalakheda chauraha,ujjain Bypass Road, Jaora, Madhya Pradesh                                       | 7000697722            | shreesarnamspices@gmail.com                       |                                                                                                                             |

|    |                   |                  |                              |                                                                                |            |                         |  |
|----|-------------------|------------------|------------------------------|--------------------------------------------------------------------------------|------------|-------------------------|--|
| 18 | Freshbite India   | Manpreet Nagpal  | Managing Director            | Village kahanpur, Hadbast no. 10, Tehsil Amloh, Distt Fatehgarh Sahib - 147203 | 9780100128 | info@freshbiteindia.com |  |
| 19 | Divya Multigrains | Banikant Dalai   | Director                     | Bhubaneswar, Odisha                                                            | 9040270270 | dmgrains@gmail.com      |  |
| 20 | Dev Milk Foods    | Arun Sharma      | Business Development Manager | Mahindra World City, Jaipur, Rajasthan                                         | 9602506028 | arunsharma.ny@gmail.com |  |
| 21 | Jiwaji University | Dr. Manoj Sharma | Coordinator                  | Gwalior 474011, MP                                                             | 9926294789 | juft20@gmail.com        |  |

### Annexure 4: Training & Employment Details

#### Training and Employment Projections:

| Year    | Total Candidates     |                                    | Women                |                                    | People with Disability |                                    |
|---------|----------------------|------------------------------------|----------------------|------------------------------------|------------------------|------------------------------------|
|         | Estimated Training # | Estimated Employment Opportunities | Estimated Training # | Estimated Employment Opportunities | Estimated Training #   | Estimated Employment Opportunities |
| 2025-26 | 00                   | 00                                 | 00                   | 00                                 | -                      | -                                  |
| 2026-27 | 350                  | 350                                | 150                  | 150                                | -                      | -                                  |
| 2027-28 | 400                  | 400                                | 200                  | 200                                | -                      | -                                  |

Data to be provided year-wise for next 3 years

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

| Qualification Version | Year | Total Candidates |          |           |        | Women   |          |           |        | People with Disability |          |           |        |
|-----------------------|------|------------------|----------|-----------|--------|---------|----------|-----------|--------|------------------------|----------|-----------|--------|
|                       |      | Trained          | Assessed | Certified | Placed | Trained | Assessed | Certified | Placed | Trained                | Assessed | Certified | Placed |
| 3.0                   |      | 258              |          |           |        |         |          |           |        |                        |          |           |        |
|                       |      |                  |          |           |        |         |          |           |        |                        |          |           |        |

Applicable for revised qualifications only, data to be provided year-wise for past 3 years.

#### List Schemes in which the previous version of Qualification was implemented:

1.

#### Content availability for previous versions of qualifications:

☒ Participant Handbook ☒ Facilitator Guide ☐ Digital Content ☐ Qualification Handbook ☐ Any Other:

Languages in which Content is available: Hindi

## Annexure 5: Blended Learning

**Blended Learning Estimated Ratio & Recommended Tools:**

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

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

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

## Annexure 6: 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 |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|---------------|------------|
| FIC/N7609: Prepare and maintain the work area and lab equipment | <i>Prepare for microbiological testing</i>                                                                                                                                                                                             | 15           | 28              | -             | 10         |
|                                                                 | PC1. ensure raw material, agar, broth, testing materials, chemicals, distilled water, glassware and other necessary tools for analysis (e.g., flasks, pipettes, autoclave, incubator, etc.), are available for microbiological testing | 1            | 2               | -             | 0.5        |
|                                                                 | PC2. select the appropriate type of media based on the contaminants being tested                                                                                                                                                       | 1            | 2               | -             | 0.5        |
|                                                                 | PC3. organize the workspace by arranging tools, materials, and samples in a systematic manner to avoid clutter                                                                                                                         | 1            | 2               | -             | 0.5        |
|                                                                 | PC4. ensure all safety gear, such as gloves, goggles and lab coats are in usable condition                                                                                                                                             | 1            | 2               | -             | 0.5        |
|                                                                 | PC5. check that safety equipment, such as eyewash stations and fire extinguishers, is functional and accessible                                                                                                                        | 1            | 2               | -             | 0.5        |
|                                                                 | PC6. prepare media culture, agar plates, sterile solutions and nutrient broth for analysis of food samples and store them appropriately                                                                                                | 1            | 2               | -             | 0.5        |
|                                                                 | PC7. place the media culture or broth in the autoclave appropriately, following the standard procedures                                                                                                                                | 1            | 2               | -             | 1          |
|                                                                 | PC8. set the appropriate autoclave parameters, such as temperature, duration, pressure, and water level, as per the requirement                                                                                                        | 1            | 2               | -             | 1          |
|                                                                 | PC9. monitor the sterilization process and turn off the autoclave after achieving the required pressure and temperature                                                                                                                | 2            | 2               | -             | 1          |
|                                                                 | PC10. release the pressure safely and remove sterilized items from the autoclave following the correct procedures                                                                                                                      | 1            | 2               | -             | 1          |
|                                                                 | PC11. cool the sterilized items in a sterile area and store them following standard protocols                                                                                                                                          | 1            | 2               | -             | 0.5        |
|                                                                 | PC12. ensure reagents required for the test meet the applicable quality requirements                                                                                                                                                   | 1            | 2               | -             | 0.5        |
|                                                                 | PC13. prepare food samples for testing in accordance with the organizational procedures                                                                                                                                                | 1            | 2               | -             | 1          |
|                                                                 | PC14. store samples as per their standard storage requirements                                                                                                                                                                         | 1            | 2               | -             | 1          |
|                                                                 | <i>Maintain the sample records</i>                                                                                                                                                                                                     | 3            | 4               | -             | 2          |
|                                                                 | PC15. log samples information, including descriptions and comparison with specifications, as per the Standard Operating Procedure (SOP)                                                                                                | 1            | 2               | -             | 0.5        |
|                                                                 | PC16. record and report any discrepancies in the samples to the relevant authority                                                                                                                                                     | 1            | 1               | -             | 0.5        |
|                                                                 | PC17. ensure samples are traceable for reporting results                                                                                                                                                                               | 1            | 1               | -             | 1          |
|                                                                 | <i>Calibrate and maintain the lab equipment</i>                                                                                                                                                                                        | 6            | 9               | -             | 4          |
|                                                                 | PC18. check the laboratory equipment, such as incubators, microscopes and autoclaves, to ensure their proper functioning                                                                                                               | 1            | 2               | -             | 0.5        |
|                                                                 | PC19. carry out regular cleaning and maintenance of lab equipment to prevent cross-contamination                                                                                                                                       | 1            | 1               | -             | 0.5        |

|                                                                |                                                                                                                                                    |           |           |   |           |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|---|-----------|
|                                                                | PC20. set up and calibrate lab equipment in accordance with the test method requirements                                                           | 1         | 2         | - | 0.5       |
|                                                                | PC21. conduct routine inspections of the lab equipment to identify wear and tear or malfunctioning components                                      | 1         | 1         | - | 0.5       |
|                                                                | PC22. replace the faulty or unsafe components in the equipment or coordinate repairs with the equipment manufacturer                               | 1         | 2         | - | 1         |
|                                                                | PC23. maintain a logbook to track maintenance schedules and repairs                                                                                | 1         | 1         | - | 1         |
|                                                                | <i>Maintain a clean and sterile lab environment</i>                                                                                                | 6         | 9         | - | 4         |
|                                                                | PC24. use appropriate Personal Protective Equipment (PPE) to ensure personal safety                                                                | 1         | 1         | - | 0.5       |
|                                                                | PC25. monitor the cleaning and sanitizing of the lab using appropriate cleaning agents and sanitizers to ensure a hygienic lab environment         | 1         | 2         | - | 0.5       |
|                                                                | PC26. follow the recommended measures to minimize waste generation and environmental impacts                                                       | 1         | 2         | - | 0.5       |
|                                                                | PC27. ensure safe collection and disposal of laboratory and hazardous waste                                                                        | 1         | 2         | - | 0.5       |
|                                                                | PC28. store lab equipment and reagents in the designated storage area                                                                              | 1         | 1         | - | 1         |
|                                                                | PC29. identify, document and report food safety and quality non-compliance issues according to SOP                                                 | 1         | 1         | - | 1         |
|                                                                | <b>Total Marks</b>                                                                                                                                 | <b>30</b> | <b>50</b> |   | <b>20</b> |
| FIC/N7610: Carry out microbiological analysis of food products | <i>Perform swab checks for hygiene monitoring</i>                                                                                                  | 4         | 7         | - | 2.5       |
|                                                                | PC1. use sterile swabs and equipment to collect samples from designated areas, such as hands, air, and equipment, according to standard procedures | 0.5       | 1         | - | 0.5       |
|                                                                | PC2. transfer swabs into test tubes containing sterile buffered peptone water or appropriate diluent without contamination                         | 0.5       | 2         | - | 0.5       |
|                                                                | PC3. ensure that the sample collection is conducted under appropriate lighting and environmental conditions                                        | 1         | 1         | - | 0.5       |
|                                                                | PC4. shake the test tube gently and allow it to stand as per specified protocols to release microorganisms into the solution                       | 1         | 1         | - | 0.5       |
|                                                                | PC5. remove the swab and analyze the sample as per laboratory specifications and standard operating procedures (SOPs)                              | 1         | 2         | - | 0.5       |
|                                                                | <i>Process microbiological samples and perform microscopy</i>                                                                                      | 4         | 7         | - | 3         |
|                                                                | PC6. apply correct disinfection procedures to work areas before and after handling samples to prevent cross-contamination                          | 0.5       | 1         | - | 0.5       |
|                                                                | PC7. prepare and stain thin smears and liquid films of samples for microscopic examination                                                         | 1         | 2         | - | 0.5       |
|                                                                | PC8. set up and calibrate microscopes, ensuring proper magnification and resolution for accurate observation of microorganisms                     | 1         | 1         | - | 0.5       |
|                                                                | PC9. examine dry, wet, and stained specimens to identify microbial structures and characteristics                                                  | 1         | 1         | - | 0.5       |
|                                                                | PC10. maintain, clean, and store microscopes and related equipment as per standard protocols                                                       | 0.5       | 2         | - | 1         |
|                                                                | <i>Cultivate and isolate microorganisms</i>                                                                                                        | 4         | 7         | - | 3         |

|                                                                             |                                                                                                                                                                        |          |           |          |            |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------|----------|------------|
| PC11.                                                                       | prepare and use culture media, agar plates, and broth as per laboratory requirements                                                                                   | 1        | 2         | -        | 0.5        |
| PC12.                                                                       | apply aseptic techniques to streak samples on agar plates to isolate single colonies of microorganisms, including those for TPC, yeast and mould, and salmonella tests | 1        | 2         | -        | 0.5        |
| PC13.                                                                       | select appropriate incubation conditions, such as temperature and gaseous environment, to support the growth of specific microorganisms                                | 1        | 1         | -        | 0.5        |
| PC14.                                                                       | perform serial dilutions of samples accurately to determine microbial load including TPC                                                                               | 0.5      | 1         | -        | 0.5        |
| PC15.                                                                       | monitor and record bacterial growth, estimating colony-forming units (CFU) as required by testing protocols                                                            | 0.5      | 1         | -        | 1          |
| <i>Perform microbiological tests and interpret results</i>                  |                                                                                                                                                                        | <i>9</i> | <i>11</i> | <i>-</i> | <i>5</i>   |
| PC16.                                                                       | conduct biochemical and serological tests on pure cultures to identify specific microorganisms                                                                         | 1        | 1         | -        | 0.5        |
| PC17.                                                                       | conduct TPC tests to quantify total microbial load, ensuring accurate plating and incubation for total microbial load determination                                    | 1        | 2         | -        | 1          |
| PC18.                                                                       | conduct yeast and mould tests, ensuring the use of selective media and incubation conditions appropriate for fungal growth detection                                   | 1        | 2         | -        | 0.5        |
| PC19.                                                                       | interpret the results of yeast and mould tests in line with standard limits for acceptable fungal contamination                                                        | 1        | 1         | -        | 0.5        |
| PC20.                                                                       | prepare enrichment media for salmonella testing                                                                                                                        | 1        | 1         | -        | 0.5        |
| PC21.                                                                       | conduct salmonella detection using biochemical or serological methods as per laboratory protocols for proper detection and identification                              | 1        | 1         | -        | 0.5        |
| PC22.                                                                       | prepare and use stained slides to observe morphological features of bacteria and other microbes                                                                        | 1        | 1         | -        | 0.5        |
| PC23.                                                                       | compare test results with standard parameters and critical limits, identifying any deviations or anomalies                                                             | 1        | 1         | -        | 0.5        |
| PC24.                                                                       | document and communicate test results and deviations to the relevant authorities as per organizational procedures                                                      | 1        | 1         | -        | 0.5        |
| <i>Perform advanced microbiological tests and interpret results</i>         |                                                                                                                                                                        | <i>5</i> | <i>9</i>  | <i>-</i> | <i>3</i>   |
| PC25.                                                                       | perform Enzyme-Linked Immunosorbent Assay (ELISA) to detect specific antigens or antibodies in food samples, ensuring accuracy and compliance with test protocols      | 0.5      | 1.5       | -        | 0.5        |
| PC26.                                                                       | conduct Polymerase Chain Reaction (PCR) for the detection and identification of DNA from pathogenic and non-pathogenic organisms in food samples                       | 1        | 1.5       | -        | 0.5        |
| PC27.                                                                       | use Real-Time PCR (qPCR) for quantitative analysis of microbial load in food products                                                                                  | 1        | 1.5       | -        | 0.5        |
| PC28.                                                                       | validate test results by comparing with standard controls and report any deviations                                                                                    | 1        | 1.5       | -        | 0.5        |
| PC29.                                                                       | differentiate between pathogens (e.g., Salmonella, E. coli) and non-pathogens (e.g., Lactobacillus) using biochemical and molecular techniques                         | 0.5      | 1.5       | -        | 0.5        |
| PC30.                                                                       | document and report test findings, including interpretations and implications for food safety                                                                          | 1        | 1.5       | -        | 0.5        |
| <i>Apply appropriate techniques to cultivate and isolate microorganisms</i> |                                                                                                                                                                        | <i>2</i> | <i>4</i>  | <i>-</i> | <i>1.5</i> |

|                                                            |                                                                                                                                                                                                 |           |           |          |           |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|----------|-----------|
|                                                            | PC31. select appropriate media and incubation conditions for culturing both pathogenic and non-pathogenic microorganisms                                                                        | 0.5       | 2         | -        | 0.5       |
|                                                            | PC32. implement selective and differential media for distinguishing between microbial groups                                                                                                    | 1         | 1         | -        | 0.5       |
|                                                            | PC33. perform colony counting and morphological identification of cultured pathogens and non-pathogens                                                                                          | 0.5       | 1         | -        | 0.5       |
|                                                            | <i>Adhere to laboratory safety and quality standards</i>                                                                                                                                        | <i>2</i>  | <i>5</i>  | <i>-</i> | <i>2</i>  |
|                                                            | PC34. follow laboratory safety guidelines, using personal protective equipment (PPE) and biosafety protocols                                                                                    | 0.5       | 2         | -        | 0.5       |
|                                                            | PC35. implement quality control measures to ensure the accuracy and precision of microbiological test results                                                                                   | 0.5       | 1         | -        | 0.5       |
|                                                            | PC36. record and report all test data in compliance with laboratory quality management systems                                                                                                  | 0.5       | 1         | -        | 0.5       |
|                                                            | PC37. dispose of samples, media, and biohazardous waste according to established safety procedures                                                                                              | 0.5       | 1         | -        | 0.5       |
|                                                            | <b>Total Marks</b>                                                                                                                                                                              | <b>30</b> | <b>50</b> |          | <b>20</b> |
| FIC/N9907: Apply Food Safety and Hygiene in the laboratory | <i>Implement practices to maintain food safety and hygiene in laboratory</i>                                                                                                                    | <i>17</i> | <i>18</i> | <i>-</i> | <i>15</i> |
|                                                            | PC1. Ensure timely medical examination of foodborne illness by a medical practitioner.                                                                                                          | 1         | 1         | -        | 1         |
|                                                            | PC2. Read the latest updates for food safety regulations and standards with respect to products, packaging, and labelling                                                                       | 2         | 1         | -        | 1         |
|                                                            | PC3. identify and control potential food safety hazards within the lab                                                                                                                          | 1         | 1         | -        | 1         |
|                                                            | PC4. ensure Material Safety Data Sheet (MSDS) are readily available and accessible in the lab for all the personnel                                                                             | 1         | 1         | -        | 1         |
|                                                            | PC5. Categorize and store chemicals according to their compatibility and hazard class as per the MSDS                                                                                           | 1         | 1         | -        | 1         |
|                                                            | PC6. <ul style="list-style-type: none"><li>follow proper procedures for the collection, labeling, and storage of biological samples to prevent</li><li>contamination and degradation.</li></ul> | 1         | 1         | -        | 1         |
|                                                            | PC7. segregate waste according to type (biological, chemical, sharps, general) and dispose of it in designated, labeled bins.                                                                   | 1         | 2         | -        | 1         |
|                                                            | PC8. Implement control measures to avoid cross-contamination of food samples.                                                                                                                   | 1         | 1         | -        | 1         |
|                                                            | PC9. Implement good hygiene and sanitation practices within the lab                                                                                                                             | 1         | 1         | -        | 1         |
|                                                            | PC10. Follow good storage practices as per organizational standards and maintain control                                                                                                        | 1         | 2         | -        | 1         |
|                                                            | PC11. apply Good Laboratory Practices (GLP) to ensure high-quality and reliable lab results                                                                                                     | 1         | 1         | -        | 1         |
|                                                            | PC12. implement and maintain food safety protocols                                                                                                                                              | 2         | 2         | -        | 1         |
|                                                            | PC13. implement practices to control food allergens and their management                                                                                                                        | 1         | 1         | -        | 1         |
|                                                            | PC14. troubleshoot minor issues with equipment that arise during operation and report any major malfunctions to <ul style="list-style-type: none"><li>the Manager immediately</li></ul>         | 1         | 1         | -        | 1         |

|                                                |                                                                                                                                                                                                                                                                                                            |           |           |   |           |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|---|-----------|
|                                                | PC15. participate in lab audits and ensure the mandatory record keeping and documentation                                                                                                                                                                                                                  | 1         | 1         | - | 1         |
|                                                | <b>Total Marks</b>                                                                                                                                                                                                                                                                                         | <b>17</b> | <b>18</b> |   | <b>15</b> |
| <b>DGT/VSQ/N0102:<br/>Employability Skills</b> | <i>Introduction to Employability Skills</i>                                                                                                                                                                                                                                                                | 1         | 1         | - | -         |
|                                                | PC1. identify employability skills required for jobs in various industries                                                                                                                                                                                                                                 | -         | -         | - | -         |
|                                                | PC2. identify and explore learning and employability portals                                                                                                                                                                                                                                               | -         | -         | - | -         |
|                                                | <i>Constitutional values – Citizenship</i>                                                                                                                                                                                                                                                                 | 1         | 1         | - | -         |
|                                                | PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.                                                                | -         | -         | - | -         |
|                                                | PC4. follow environmentally sustainable practices                                                                                                                                                                                                                                                          | -         | -         | - | -         |
|                                                | <i>Becoming a Professional in the 21st Century</i>                                                                                                                                                                                                                                                         | 2         | 4         | - | -         |
|                                                | PC5. recognize the significance of 21st Century Skills for employment                                                                                                                                                                                                                                      | -         | -         | - | -         |
|                                                | PC6. practice the 21st Century Skills such as Self- Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life | -         | -         | - | -         |
|                                                | <i>Basic English Skills</i>                                                                                                                                                                                                                                                                                | 2         | 3         | - | -         |
|                                                | PC7. use basic English for everyday conversation in different contexts, in person and over the telephone                                                                                                                                                                                                   | -         | -         | - | -         |
|                                                | PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English                                                                                                                                                                                                  | -         | -         | - | -         |
|                                                | PC9. write short messages, notes, letters, e-mails etc. in English                                                                                                                                                                                                                                         | -         | -         | - | -         |
|                                                | <i>Career Development &amp; Goal Setting</i>                                                                                                                                                                                                                                                               | 1         | 2         | - | -         |
|                                                | PC10. understand the difference between job and career                                                                                                                                                                                                                                                     | -         | -         | - | -         |
|                                                | PC11. prepare a career development plan with short- and long-term goals, based on aptitude                                                                                                                                                                                                                 | -         | -         | - | -         |
|                                                | <i>Communication Skills</i>                                                                                                                                                                                                                                                                                | 2         | 2         | - | -         |
|                                                | PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings                                                                                                                                                                                             | -         | -         | - | -         |
|                                                | PC13. work collaboratively with others in a team                                                                                                                                                                                                                                                           | -         | -         | - | -         |
|                                                | <i>Diversity &amp; Inclusion</i>                                                                                                                                                                                                                                                                           | 1         | 2         | - | -         |
|                                                | PC14. communicate and behave appropriately with all genders and PwD                                                                                                                                                                                                                                        | -         | -         | - | -         |
|                                                | PC15. escalate any issues related to sexual harassment at workplace according to POSH Act                                                                                                                                                                                                                  | -         | -         | - | -         |
|                                                | <i>Financial and Legal Literacy</i>                                                                                                                                                                                                                                                                        | 2         | 3         | - | -         |
|                                                | PC16. select financial institutions, products, and services as per requirement                                                                                                                                                                                                                             | -         | -         | - | -         |
|                                                | PC17. carry out offline and online financial transactions, safely and securely                                                                                                                                                                                                                             | -         | -         | - | -         |
|                                                | PC18. identify common components of salary and compute income, expenses, taxes, investments etc.                                                                                                                                                                                                           | -         | -         | - | -         |
|                                                | PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation                                                                                                                                                                                                             |           |           |   |           |
|                                                | <i>Essential Digital Skills</i>                                                                                                                                                                                                                                                                            | 3         | 4         | - | -         |

|                                                                                                                                                                           |           |            |          |           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|----------|-----------|
| PC20. operate digital devices and carry out basic internet operations securely and safely                                                                                 | -         | -          | -        | -         |
| PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively                                                                          | -         | -          | -        | -         |
| PC22. use basic features of word processor, spreadsheets, and presentations                                                                                               | -         | -          | -        | -         |
| <i>Entrepreneurship</i>                                                                                                                                                   | 2         | 3          | -        | -         |
| PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research                                       | -         | -          | -        | -         |
| PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion                                                      | -         | -          | -        | -         |
| PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity                                           | -         | -          | -        | -         |
| <i>Customer Service</i>                                                                                                                                                   | 1         | 2          | -        | -         |
| PC26. identify different types of customers                                                                                                                               | -         | -          | -        | -         |
| PC27. identify and respond to customer requests and needs in a professional manner                                                                                        | -         | -          | -        | -         |
| PC28. follow appropriate hygiene and grooming standards                                                                                                                   | -         | -          | -        | -         |
| <i>Getting ready for apprenticeship &amp; Jobs</i>                                                                                                                        | 2         | 3          | -        | -         |
| PC29. create a professional Curriculum vitae (Résumé)                                                                                                                     | -         | -          | -        | -         |
| PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively | -         | -          | -        | -         |
| PC31. apply to identified job openings using offline/online methods as per requirement                                                                                    | -         | -          | -        | -         |
| PC32. answer questions politely, with clarity and confidence, during recruitment and selection                                                                            | -         | -          | -        | -         |
| PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements                                                                        | -         | -          | -        | -         |
| <b>Total Marks</b>                                                                                                                                                        | <b>20</b> | <b>30</b>  |          |           |
| <b>Grand Total</b>                                                                                                                                                        | <b>97</b> | <b>148</b> | <b>-</b> | <b>55</b> |

## Annexure 7: Assessment Strategy

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

Assessment will be based on the concept of Independent Assessors empanelled with Assessment Agencies, identified, selected, trained and certified on Assessment techniques. These Assessors would be aligned to assess as per the laid down criteria.

Assessment Agency would conduct assessment only at the training centres of Training Partner or designated testing centers authorized by FICSI.

Ideally, the assessment will be a continuous process comprising of three distinct steps:

- A. Mid-term assessment
- B. Term/Final Assessment

Each National Occupational Standard (NOS) in the respective QPs will be assigned weightage. There in each Performance Criteria in the NOS will be assigned marks for theory and/or practical based on relative importance and criticality of function.

This will facilitate preparation of question bank / paper sets for each of the QPs. Each of these papers sets/question banks created by the Assessment Agency will be validated by the industry subject matter experts through FICSI, especially with regard to the practical test and the defined tolerances, finish, accuracy etc.

The following tools are proposed to be used for final assessment:

- i. Written Test: This will comprise of
  - (I True/False Statements,
  - (ii) Multiple Choice Questions,
  - (iii) Matching Type Questions. Online system for this will be preferred.
- ii. Practical Test: This will comprise a test job to be prepared as per project briefing following appropriate working steps, using necessary tools, equipment and instruments. Through observation it will be possible to ascertain candidate's aptitude, attention to details, quality consciousness etc. The end product will be measured against the pre-decided MCQ filled by the Assessor to gauge the level of his skill achievements.
- iii. Structured Interview: This tool will be used to assess the conceptual understanding and the behavioral aspects as regards the job role and the specific task at hand.

### On the Job:

1. Each module (which covers the job profile of Microbiologist (Food)) will be assessed separately.
2. The candidate must score 50% in each module to successfully complete the OJT.
3. Tools of Assessment that will be used for assessing whether the candidate is having desired skills and etiquette of dealing with customers, understanding needs & requirements, assessing the customer and perform Soft Skills effectively:
  - Videos of Trainees during OJT
  - Answer Sheets of Question Banks
  - Assessing the Log Book entries of Trainees at Employer location
  - Employer Performance Feedback.
4. Assessment of each Module will ensure that the candidate is able to:

- Preparing and maintaining the work area and lab equipment.
- Carrying out microbiological analysis of food products.
- Applying Food Safety and Hygiene in the laboratory.

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## Annexure 8: Acronym and Glossary

## Acronym

| Acronym | Description                                            |
|---------|--------------------------------------------------------|
| AA      | Assessment Agency                                      |
| AB      | Awarding Body                                          |
| ISCO    | International Standard Classification of Occupations   |
| NCO     | National Classification of Occupations                 |
| NCRF    | National Credit Framework                              |
| NOS     | National Occupational Standard(s)                      |
| NQR     | National Qualification Register                        |
| NSQF    | National Skills Qualifications Framework               |
| OJT     | On the Job Training                                    |
| ES      | Employability Skills                                   |
| NCVT    | National Council for Vocational Education and Training |
| FSSAI   | Food Safety and Standards Authority of India           |
| PPE     | Personal Protective Equipment                          |
| CFU     | Colony-Forming Units                                   |
| PCR     | Polymerase Chain Reaction                              |
| qPCR    | Real-Time PCR                                          |
| ELISA   | Enzyme-Linked Immunosorbent Assay                      |
| DNA     | Deoxyribonucleic Acid                                  |
| GMP     | Manufacturing Practices                                |
| GHP     | Good Hygiene Practices                                 |
| HACCP   | Hazard Analysis Critical Control Points                |
| VACCP   | Vulnerability Assessment Critical Control Points       |
| TACCP   | Threat Assessment Critical Control Points              |
| ISO     | International Organization for Standardization         |
| CIP     | Clean-in-Place                                         |
| COP     | Clean-out-of-Place                                     |
| CPR     | Cardiopulmonary Resuscitation                          |
| FEFO    | First Expiry, First Out                                |
| FIFO    | First In, First Out                                    |
| RCA     | Root Cause Analysis                                    |
| CAPA    | Corrective and Preventive Action                       |

## 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 which 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 of 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 on the basis of their main economic function, product, service or technology.                                                                                                                    |
| <b>Long Term Training</b>                    | Long-term skilling means any vocational training program undertaken for a year and above. <a href="https://ncvet.gov.in/sites/default/files/NCVET.pdf">https://ncvet.gov.in/sites/default/files/NCVET.pdf</a>                          |