

## Qualification Pack



# Production Equipment Operator- Active Pharmaceutical Ingredient (API) / Bulk Drug

Electives: Sterile Manufacturing and Packaging

QP Code: LFS/Q0207 Instantiated QP Code: LFS/Q0207-SI002

Version: 4.0

NSQF Level: 4



## Qualification Pack

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## Qualification Pack

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# LFS/Q0207-SI002: Production Equipment Operator- Active Pharmaceutical Ingredient (API) / Bulk Drug

## Brief Job Description

The Production Equipment Operator API program enables the learner to be able to meet the job responsibilities for operating the machines following Good Manufacturing Practices for the manufacturing/packaging of bulk drugs / active pharmaceutical ingredients (API). The program shall be able to develop learner to perform basic in-process quality checks to verify that the quality parameters are met for batch manufacturing/ continuous manufacturing and packaging. He/ she shall also be able to generate and maintain the critical records for every activity performed in compliance with data integrity rules. The Program shall also enable engineering skills in the learners to maintain the semi-automated and automated plant equipment and troubleshoot and resolve primary level simple engineering problems to ensure minimal breakdown of the production and packaging line.

## Personal Attributes

The individual should have good communication skills in the regional language and be able to comprehend the instructions and process documents in the English language. He/She should have good analytical skills. The job holder should be able to give attention to detail and understand the criticality of the work.

## Applicable National Occupational Standards (NOS)

### Compulsory NOS:

1. [LFS/N0274: Discuss about Life Sciences Industry and Basics of manufacturing Operations](#)
2. [LFS/N0213: Perform pre-production checks and prepare Equipment for bulk drug production](#)
3. [LFS/N0112: Adherence to Environment, health and safety guidelines in a production facility and GMP controlled area](#)
4. [LFS/N0265: Maintain compliance with current Good Manufacturing Practices \(cGMP\) and other regulations](#)
5. [LFS/N0113: Ensure a hygienic and clean work area to avoid contamination](#)
6. [LFS/N0104: Coordinate and communicate with Supervisor/ production chemist, teams and auditors](#)
7. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)

### Electives(mandatory to select at least one):

#### Elective : Sterile Manufacturing and Packaging

This elective is about equipment operator performing Sterile Bulk Drug / API manufacturing and primary



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packaging operations

1. [LFS/N0267: Perform sterile Bulk drug API/ manufacturing and primary packaging operations](#)

## Qualification Pack (QP) Parameters

|   |  |
|---|--|
| <b>Sector</b>   | Life Sciences  |
| <b>Sub-Sector</b>   | Pharmaceutical, Bio Pharmaceutical   |
| <b>Occupation</b>   | Manufacturing  |
| <b>Country</b>  | India  |
| <b>NSQF Level</b>   | 4  |
| <b>Credits</b>  | 16   |
| <b>Aligned to NCO/ISCO/ISIC Code</b>                      | NCO 2015/ 3133.99  |
| <b>Minimum Educational Qualification &amp; Experience</b> | 12th Class (Science Subjects Preferred) with NA of experience<br>OR<br>Completed 1st year of diploma (after 12th) (Diploma in Pharmacy )<br>OR<br>10th grade pass plus 2-year NTC (2 year NTC/NAC in Engg trade)<br>OR<br>Certificate-NSQF (Level 3 (Assistant- Manufacturing and Packaging (Pharma, Biologics and Medical device))) with 3 Years of experience relevant experience in Life Science Sector |
| <b>Minimum Level of Education for Training in School</b>  | 10th Class   |
| <b>Pre-Requisite License or Training</b>                  | NA   |
| <b>Minimum Job Entry Age</b>                              | 18 Years   |
| <b>Last Reviewed On</b>                                   | NA   |
| <b>Next Review Date</b>                                   | 17/12/2027   |
| <b>NSQC Approval Date</b>                                 | 17/12/2024   |
| <b>Version</b>  | 4.0  |



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|                       |                               |
|-----------------------|-------------------------------|
| Reference code on NQR | QG-04-LS-03402-2024-V2-LSSSDC |
| NQR Version           | 2.0                           |

### Remarks:

Maximum two Electives can be chosen by a candidate for Qualification Certification and for Pharmacy students



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### LFS/N0274: Discuss about Life Sciences Industry and Basics of manufacturing Operations

#### Description

This NOS unit is related to discussing about Life Sciences Industry and Basics of manufacturing Operations

#### Scope

The scope covers the following :

- Life Sciences industry and Manufacturing Occupation
- Basics of manufacturing Operations

#### Elements and Performance Criteria

##### *Life Sciences industry and Manufacturing Occupation*

To be competent, the user/individual on the job must be able to:

- PC1.** discuss key insights in the life sciences sector through various market research reports
- PC2.** Identify the major segments within the life sciences industry (pharmaceuticals, biotechnology, medical devices, etc.).
- PC3.** Elaborate importance of a skilled individual in manufacturing Occupation
- PC4.** explain the role of government policies and initiatives in promoting the growth of the life sciences industry in India.

##### *Basics of manufacturing Operations*

To be competent, the user/individual on the job must be able to:

- PC5.** Comply with key regulatory requirements for manufacturing facilities (e.g., cGMP, cGLP, cGDP).
- PC6.** Ensure ethical considerations in life sciences manufacturing, including data integrity and patient safety.
- PC7.** Analyze the impact of standard quantity effect on product quality and efficacy.
- PC8.** Analyze the role of each component in ensuring efficient and compliant manufacturing operations

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** Understand the Indian Life Sciences industry's key features and challenges.
- KU2.** major segments like pharmaceuticals, biotechnology, and medical devices.
- KU3.** critical role of skilled individuals in ensuring quality and safety in manufacturing.
- KU4.** various guidelines like current Good Manufacturing Practices, current Good Storage Practices, Good Documentation Practices
- KU5.** basics of ALCOA Principles, data integrity and information security rules





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- KU6.** methods to conserve water and energy
- KU7.** methods to minimize the pollution
- KU8.** how government policies and initiatives drive industry growth.

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** use written communication skills to record information accurately in compliance with ALCOA principles as per SOP and GMP guidelines
- GS2.** use reading and comprehension skills to read the various coding systems, instructions, guidelines, procedures, rules, and signages
- GS3.** use listening skills to interpret the instructions, escalation matrix, procedures to be followed and to seek clarifications
- GS4.** use verbal communication skills to interact with teammates, supervisor, production chemist, and cross-functional teams
- GS5.** use team-building skills while dealing with teammates
- GS6.** apply problem-solving skills to find solutions for deviations found during process-related checks, non-conformities in standards and labeling
- GS7.** apply critical thinking skills to analyze and identify when to report an issue/concern to the supervisor and when to deal with a process error individually, depending on the type of concern
- GS8.** apply customer centricity to remain compliant with data integrity rules, GMP/GLP guidelines and to evaluate impact of wrongdoings
- GS9.** apply decision-making skills to make balanced judgments within the authority while dealing with daily work-life situations





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### Assessment Criteria

| Assessment Criteria for Outcomes  | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <i>Life Sciences industry and Manufacturing Occupation</i>  | <b>20</b>    | -               | <b>5</b>      | <b>5</b>   |
| <b>PC1.</b> discuss key insights in the life sciences sector through various market research reports                                | -            | -               | -             | -          |
| <b>PC2.</b> Identify the major segments within the life sciences industry (pharmaceuticals, biotechnology, medical devices, etc.).  | -            | -               | -             | -          |
| <b>PC3.</b> Elaborate importance of a skilled individual in manufacturing Occupation  | -            | -               | -             | -          |
| <b>PC4.</b> explain the role of government policies and initiatives in promoting the growth of the life sciences industry in India. | -            | -               | -             | -          |
| <i>Basics of manufacturing Operations</i>   | <b>20</b>    | <b>30</b>       | <b>10</b>     | <b>10</b>  |
| <b>PC5.</b> Comply with key regulatory requirements for manufacturing facilities (e.g., cGMP, cGLP, cGDP).                          | -            | -               | -             | -          |
| <b>PC6.</b> Ensure ethical considerations in life sciences manufacturing, including data integrity and patient safety.              | -            | -               | -             | -          |
| <b>PC7.</b> Analyze the impact of standard quantity effect on product quality and efficacy.   | -            | -               | -             | -          |
| <b>PC8.</b> Analyze the role of each component in ensuring efficient and compliant manufacturing operations                         | -            | -               | -             | -          |
| <b>NOS Total</b>  | <b>40</b>    | <b>30</b>       | <b>15</b>     | <b>15</b>  |



## Qualification Pack

### National Occupational Standards (NOS) Parameters

|                            |   |
|----------------------------|---|
| <b>NOS Code</b>            | LFS/N0274   |
| <b>NOS Name</b>            | Discuss about Life Sciences Industry and Basics of manufacturing Operations |
| <b>Sector</b>              | Life Sciences   |
| <b>Sub-Sector</b>          | Pharmaceutical, Bio Pharmaceutical  |
| <b>Occupation</b>          | Manufacturing   |
| <b>NSQF Level</b>          | 4   |
| <b>Credits</b>             | 1.00  |
| <b>Version</b>             | 1.0   |
| <b>Last Reviewed Date</b>  | 08/04/2025  |
| <b>Next Review Date</b>    | 08/04/2028  |
| <b>NSQC Clearance Date</b> | 08/04/2025  |



## Qualification Pack

### LFS/N0112: Adherence to Environment, health and safety guidelines in a production facility and GMP controlled area

#### Description

This NOS unit is about adhering with the rules and regulations related to health, safety, environment, and security in a manufacturing facility or testing/ research laboratory in life sciences sector

#### Scope

The scope covers the following :

- Follow health and personal hygiene protocols
- Follow safety and security procedures
- Follow emergency procedures

#### Elements and Performance Criteria

##### *Follow health and personal hygiene protocols*

To be competent, the user/individual on the job must be able to:

- PC1.** comply with health and personal hygiene-related protocols as per WHO standards, , revised GMP and ICH GMP guidelines
- PC2.** wash hands before entering in the production area as per SOP
- PC3.** report any allergy, sickness or any other environment-related breach before or after entering the work premises to the designated person
- PC4.** follow gowning procedures while entering an environment controlled work area

##### *Follow safety and security procedures*

To be competent, the user/individual on the job must be able to:

- PC5.** comply with safety and security policies and procedures
- PC6.** use appropriate safety gears like headgear, masks, gloves and other relevant safety accessories as mentioned in the guidelines, while carrying out work
- PC7.** use helmets, ropes, harness, and ladders while working at heights
- PC8.** use pulleys/ forklift (if available) to transport the material/ spares/ heavy assembly and tools
- PC9.** report any identified breaches in safety and security policies and procedures to the designated person
- PC10.** segregate material and follow the 5S system at the storage area
- PC11.** adhere to storage and handling guidelines for hazardous material
- PC12.** identify and correct any hazards that one can deal with safely, competently and within the limits of authority
- PC13.** record the details of completed safety drills and training

##### *Follow emergency procedures*

To be competent, the user/individual on the job must be able to:



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- PC14.** raise the alarm and report any hazards that one is not competent to deal with, to the relevant person in line with organizational procedures and warn other people who may be affected
- PC15.** inform the concerned person immediately about every unsafe act/ incident
- PC16.** follow emergency procedures efficiently

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** individual's role and responsibilities in maintaining healthy, hygienic, safe and secure working environment
- KU2.** company's procedures and protocols for the environment, health and safety
- KU3.** relevant legislative requirements as per local laws
- KU4.** implications that any non-compliance with health, safety and security may have on individuals and the organization
- KU5.** workplace hazards in the manufacturing/ research facility in the life sciences sector and reporting procedures for unhealthy/ unsafe act/incidents, hazards and accident as per GMP
- KU6.** limits of individual responsibility for dealing with hazards
- KU7.** chemical substances, their characteristics, and required precaution and safety measures
- KU8.** gowning procedure
- KU9.** the organization's emergency procedures for different emergency situations and the importance of following these
- KU10.** evacuation procedures for employees, contract staff and visitors
- KU11.** procedure to summon medical assistance and the emergency services, where necessary
- KU12.** different types of breaches in the environment, health, safety and security and how and when to report these
- KU13.** WHO guidelines for personal hygiene
- KU14.** types of safety gears and procedure to use them
- KU15.** importance of material segregation and 5S system
- KU16.** WHO guidelines for handling and storing hazardous material

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** use reading and comprehension skills to read instructions, guidelines, procedures, rules, and signages
- GS2.** use written communication skills to accurately record every information required to be reported as per SOP and GMP guidelines in the language prescribed by the company's SOP
- GS3.** apply planning and organizing skills to plan and organize tools and material required for work to fulfil environment, health, safety and security requirements
- GS4.** use critical thinking skills to ascertain the breach/ compliance of EHS protocols



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- GS5.** apply customer centricity to remain compliant with data integrity rules, GMP guidelines and to evaluate impact of wrongdoings
- GS6.** apply decision-making skills to make balanced judgments within the authority in different situations while dealing with hazards and breaches
- GS7.** apply problem-solving skills to find solutions for workflow-related difficulties
- GS8.** use verbal communication skills to communicate with supervisor/ manager/ EHS Incharge or any other concerned authority clearly for escalating any emergency situation or hazard

## Qualification Pack

### Assessment Criteria

| Assessment Criteria for Outcomes  | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <i>Follow health and personal hygiene protocols</i>   | <b>10</b>    | <b>10</b>       | <b>5</b>      | <b>5</b>   |
| <b>PC1.</b> comply with health and personal hygiene-related protocols as per WHO standards, , revised GMP and ICH GMP guidelines                                    | -            | -               | -             | -          |
| <b>PC2.</b> wash hands before entering in the production area as per SOP  | -            | -               | -             | -          |
| <b>PC3.</b> report any allergy, sickness or any other environment-related breach before or after entering the work premises to the designated person                | -            | -               | -             | -          |
| <b>PC4.</b> follow gowning procedures while entering an environment controlled work area  | -            | -               | -             | -          |
| <i>Follow safety and security procedures</i>  | <b>10</b>    | <b>20</b>       | <b>5</b>      | <b>5</b>   |
| <b>PC5.</b> comply with safety and security policies and procedures   | -            | -               | -             | -          |
| <b>PC6.</b> use appropriate safety gears like headgear, masks, gloves and other relevant safety accessories as mentioned in the guidelines, while carrying out work | -            | -               | -             | -          |
| <b>PC7.</b> use helmets, ropes, harness, and ladders while working at heights   | -            | -               | -             | -          |
| <b>PC8.</b> use pulleys/ forklift (if available) to transport the material/ spares/ heavy assembly and tools  | -            | -               | -             | -          |
| <b>PC9.</b> report any identified breaches in safety and security policies and procedures to the designated person  | -            | -               | -             | -          |
| <b>PC10.</b> segregate material and follow the 5S system at the storage area  | -            | -               | -             | -          |
| <b>PC11.</b> adhere to storage and handling guidelines for hazardous material   | -            | -               | -             | -          |



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| Assessment Criteria for Outcomes  | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <b>PC12.</b> identify and correct any hazards that one can deal with safely, competently and within the limits of authority   | -            | -               | -             | -          |
| <b>PC13.</b> record the details of completed safety drills and training   | -            | -               | -             | -          |
| <i>Follow emergency procedures</i>  | <b>10</b>    | <b>10</b>       | <b>5</b>      | <b>5</b>   |
| <b>PC14.</b> raise the alarm and report any hazards that one is not competent to deal with, to the relevant person in line with organizational procedures and warn other people who may be affected | -            | -               | -             | -          |
| <b>PC15.</b> inform the concerned person immediately about every unsafe act/ incident   | -            | -               | -             | -          |
| <b>PC16.</b> follow emergency procedures efficiently  | -            | -               | -             | -          |
| <b>NOS Total</b>  | <b>30</b>    | <b>40</b>       | <b>15</b>     | <b>15</b>  |





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### National Occupational Standards (NOS) Parameters

|                            |   |
|----------------------------|---|
| <b>NOS Code</b>            | LFS/N0112   |
| <b>NOS Name</b>            | Adherence to Environment, health and safety guidelines in a production facility and GMP controlled area |
| <b>Sector</b>              | Life Sciences   |
| <b>Sub-Sector</b>          | Pharmaceutical, Bio Pharmaceutical, Contract Research   |
| <b>Occupation</b>          | Generic   |
| <b>NSQF Level</b>          | 4   |
| <b>Credits</b>             | 1.00  |
| <b>Version</b>             | 4.0   |
| <b>Last Reviewed Date</b>  | 17/12/2024  |
| <b>Next Review Date</b>    | 17/12/2027  |
| <b>NSQC Clearance Date</b> | 17/12/2024  |



## Qualification Pack

### LFS/N0265: Maintain compliance with current Good Manufacturing Practices (cGMP) and other regulations

#### Description

This NOS unit is about maintaining compliance with current Good Manufacturing Practices (cGMP) and other regulations

#### Scope

The scope covers the following :

- GMP compliance in production process
- GMP compliance in waste management
- GMP compliance in machine maintenance
- GMP compliance in documentation
- Environment sustainability

#### Elements and Performance Criteria

##### *GMP compliance in production process*

To be competent, the user/individual on the job must be able to:

- PC1.** perform the cleaning of machine in compliance with cGMP guidelines and SOP
- PC2.** monitor environmental conditions in production area as per SOP and cGMP guidelines
- PC3.** perform and record pre-production checks, job safety analysis
- PC4.** ensure adherence to Good Manufacturing Practices related to equipment operations
- PC5.** perform the specific in-process production checks as directed in SOPs
- PC6.** comply with the appropriate cGMP rules for the batch change over procedure

##### *GMP Compliance in waste management*

To be competent, the user/individual on the job must be able to:

- PC7.** comply with the appropriate environmental rules and organizational SOP for the waste management and disposal
- PC8.** perform waste segregation and generate record for the same
- PC9.** perform waste disposal under supervision and ensure Effluent treatment and solvent recycling procedures under supervision

##### *GMP compliance in equipment maintenance*

To be competent, the user/individual on the job must be able to:

- PC10.** perform the general routine maintenance of equipment and maintain semi-automated and automated plant equipment and troubleshoot of machine as per schedule
- PC11.** perform the calibration of equipment under supervision as per SOP

##### *GMP compliance in documentation*

To be competent, the user/individual on the job must be able to:

- PC12.** adhere to ALCOA principles during documentation of the activities performed



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- PC13.** secure authorization and approval in writing from competent authorities in quality assurance and production team before start of any production activity
- PC14.** ensure Audit trail of every document generated by oneself
- PC15.** ensure that only authorized user ID is used to enter the record entries in an automated system
- PC16.** file deviation in case of non adherence of Good Documentation Practices and SOPs and notify supervisor / manager
- PC17.** correct the wrong entries, using ALCOA principles
- PC18.** perform electronic record generation only after checking validation and calibration tag on the equipment panel/ computer

### *Environment Sustainability*

To be competent, the user/individual on the job must be able to:

- PC19.** ensure energy conservation by switching off the machine and equipment post operations
- PC20.** identify ways to optimize the usage of electricity/energy in various tasks/activities/processes
- PC21.** ensure energy conservation by optimizing the machine/ equipment performance
- PC22.** apply environment-friendly methods given in SOPs for waste disposal
- PC23.** ensure no leakage of water in the plant
- PC24.** follow organizational environment sustainability guidelines and procedures to achieve energy and water conservation as well as zero pollution.

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** organizational SOPs relevant to machine operations and production processes
- KU2.** SOP for entry and exit from GMP area
- KU3.** rules of WHO and ICH-GMP relevant to roles and responsibility of Machine Operator
- KU4.** Good Manufacturing Practices, Good Storage Practices, Good Documentation Practices
- KU5.** machine operation manual and troubleshooting of the machines available in assigned section
- KU6.** procedures for documentation, reporting and escalation
- KU7.** basics of ALCOA Principles, data integrity and information security rules
- KU8.** methods to conserve water and energy
- KU9.** methods to minimize the pollution

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** use written communication skills to record information accurately in compliance with ALCOA principles as per SOP and cGMP guidelines
- GS2.** use reading and comprehension skills to read the various coding systems, instructions, guidelines, procedures, rules, and signages



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- GS3.** use listening skills to interpret the instructions, escalation matrix, procedures to be followed and to seek clarifications
- GS4.** use verbal communication skills to interact with teammates, supervisor, production chemist, and cross-functional teams
- GS5.** use team-building skills while dealing with teammates
- GS6.** apply problem-solving skills to find solutions for deviations found during process-related checks, non-conformities in standards and labeling
- GS7.** apply critical thinking skills to analyze and identify when to report an issue/concern to the supervisor and when to deal with a process error individually, depending on the type of concern
- GS8.** apply customer centricity to remain compliant with data integrity rules, cGMP/GLP guidelines and to evaluate impact of wrongdoings
- GS9.** apply decision-making skills to make balanced judgments within the authority while dealing with daily work-life situations

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### Assessment Criteria

| Assessment Criteria for Outcomes  | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <i>GMP compliance in production process</i>   | <b>7</b>     | <b>8</b>        | <b>5</b>      | <b>5</b>   |
| <b>PC1.</b> perform the cleaning of machine in compliance with cGMP guidelines and SOP  | -            | -               | -             | -          |
| <b>PC2.</b> monitor environmental conditions in production area as per SOP and cGMP guidelines  | -            | -               | -             | -          |
| <b>PC3.</b> perform and record pre-production checks, job safety analysis   | -            | -               | -             | -          |
| <b>PC4.</b> ensure adherence to Good Manufacturing Practices related to equipment operations  | -            | -               | -             | -          |
| <b>PC5.</b> perform the specific in-process production checks as directed in SOPs   | -            | -               | -             | -          |
| <b>PC6.</b> comply with the appropriate cGMP rules for the batch change over procedure  | -            | -               | -             | -          |
| <i>GMP Compliance in waste management</i>   | <b>5</b>     | <b>7</b>        | <b>5</b>      | <b>3</b>   |
| <b>PC7.</b> comply with the appropriate environmental rules and organizational SOP for the waste management and disposal  | -            | -               | -             | -          |
| <b>PC8.</b> perform waste segregation and generate record for the same  | -            | -               | -             | -          |
| <b>PC9.</b> perform waste disposal under supervision and ensure Effluent treatment and solvent recycling procedures under supervision                                   | -            | -               | -             | -          |
| <i>GMP compliance in equipment maintenance</i>  | <b>7</b>     | <b>8</b>        | <b>5</b>      | <b>5</b>   |
| <b>PC10.</b> perform the general routine maintenance of equipment and maintain semi-automated and automated plant equipment and troubleshoot of machine as per schedule | -            | -               | -             | -          |
| <b>PC11.</b> perform the calibration of equipment under supervision as per SOP  | -            | -               | -             | -          |
| <i>GMP compliance in documentation</i>  | <b>7</b>     | <b>8</b>        | <b>5</b>      | <b>5</b>   |

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| Assessment Criteria for Outcomes  | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <b>PC12.</b> adhere to ALCOA principles during documentation of the activities performed  | -            | -               | -             | -          |
| <b>PC13.</b> secure authorization and approval in writing from competent authorities in quality assurance and production team before start of any production activity | -            | -               | -             | -          |
| <b>PC14.</b> ensure Audit trail of every document generated by oneself  | -            | -               | -             | -          |
| <b>PC15.</b> ensure that only authorized user ID is used to enter the record entries in an automated system   | -            | -               | -             | -          |
| <b>PC16.</b> file deviation in case of non adherence of Good Documentation Practices and SOPs and notify supervisor / manager   | -            | -               | -             | -          |
| <b>PC17.</b> correct the wrong entries, using ALCOA principles  | -            | -               | -             | -          |
| <b>PC18.</b> perform electronic record generation only after checking validation and calibration tag on the equipment panel/ computer                                 | -            | -               | -             | -          |
| <i>Environment Sustainability</i>   | <b>1</b>     | <b>2</b>        | <b>1</b>      | <b>1</b>   |
| <b>PC19.</b> ensure energy conservation by switching off the machine and equipment post operations  | -            | -               | -             | -          |
| <b>PC20.</b> identify ways to optimize the usage of electricity/energy in various tasks/activities/processes  | -            | -               | -             | -          |
| <b>PC21.</b> ensure energy conservation by optimizing the machine/ equipment performance  | -            | -               | -             | -          |
| <b>PC22.</b> apply environment-friendly methods given in SOPs for waste disposal  | -            | -               | -             | -          |
| <b>PC23.</b> ensure no leakage of water in the plant  | -            | -               | -             | -          |
| <b>PC24.</b> follow organizational environment sustainability guidelines and procedures to achieve energy and water conservation as well as zero pollution.           | -            | -               | -             | -          |
| <b>NOS Total</b>  | <b>27</b>    | <b>33</b>       | <b>21</b>     | <b>19</b>  |



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### National Occupational Standards (NOS) Parameters

|                            |  |
|----------------------------|--|
| <b>NOS Code</b>            | LFS/N0265  |
| <b>NOS Name</b>            | Maintain compliance with current Good Manufacturing Practices (cGMP) and other regulations |
| <b>Sector</b>              | Life Sciences  |
| <b>Sub-Sector</b>          | Pharmaceutical, Bio Pharmaceutical   |
| <b>Occupation</b>          | Manufacturing  |
| <b>NSQF Level</b>          | 4  |
| <b>Credits</b>             | 4.00   |
| <b>Version</b>             | 3.0  |
| <b>Last Reviewed Date</b>  | 17/12/2024   |
| <b>Next Review Date</b>    | 17/12/2027   |
| <b>NSQC Clearance Date</b> | 17/12/2024   |





## Qualification Pack

### LFS/N0113: Ensure a hygienic and clean work area to avoid contamination

#### Description

This NOS unit is about maintaining hygienic and clean work area to avoid contamination

#### Scope

The scope covers the following :

- Sanitation activities before starting the work
- Sanitation activities during work
- Sanitation activities post completion of work

#### Elements and Performance Criteria

##### *sanitation activities before starting the work*

To be competent, the user/individual on the job must be able to:

- PC1.** inspect the area and machine, taking into account various surfaces
- PC2.** check for cleaning validation tag on machines and accessories
- PC3.** ensure to clean the area or machine part as per SOP, in case of any stain on floor or machine
- PC4.** perform the cleaning validation in the presence of authorized personnel or QA inspector
- PC5.** ensure that there is adequate ventilation for the work being carried out
- PC6.** handle the cleaning material/reagent only after wearing the personal protective equipment required for the cleaning method
- PC7.** segregate and store the chemicals/ material with an appropriate label in designated places to avoid contamination

##### *Sanitation activities during work*

To be competent, the user/individual on the job must be able to:

- PC8.** deal with accidental spillage, if any, caused while carrying out the work and clean as per SOP
- PC9.** segregate and store the intermediate material with an appropriate label in designated places to avoid contamination
- PC10.** report any additional cleaning requirement that is outside one's purview, to the appropriate person
- PC11.** segregate, store and dispose of the rejected products or generated waste as per SOP under the supervision of supervisor and EHS personnel

##### *Sanitation activities after completion of work*

To be competent, the user/individual on the job must be able to:

- PC12.** ensure that there is no oily substance on the floor to avoid slippage
- PC13.** ensure that no scrap material is lying around
- PC14.** perform the cleaning of the equipment after every batch production as per SOP
- PC15.** perform the cleaning validation of the equipment in the presence of designated authorized personnel and QA inspector



## Qualification Pack

- PC16.** ensure that, on completion of the work, the area is left clean and dry and meets WHO and cGMP requirements of sanitized premises
- PC17.** place the trolley, equipment, materials and personal protective equipment at the designated place after use, ensuring they are clean and securely stored
- PC18.** dispose of the waste garnered from the activity as per SOP
- PC19.** dispose of used and un-used solutions according to manufacturer's instructions, and clean the equipment thoroughly

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** levels of hygiene required by production area and the importance of maintaining the same
- KU2.** methodology for production area inspection with methods and materials required for cleaning a variety of surfaces and equipment
- KU3.** the method to check the treated surface and equipment on completion of cleaning
- KU4.** procedures for reporting any unidentified soiling or any deviation for cleaning validation
- KU5.** role of different materials, chemicals, and equipment in cleaning and sanitation of production area
- KU6.** current Good Manufacturing Practices (cGMP) and WHO guidelines for cleaning/ sanitation activity and maintaining hygiene
- KU7.** cleaning validation process
- KU8.** waste disposal guidelines as per WHO and cGMP and relevant organizational SOPs

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** use written communication skills to record and communicate details of work done to appropriate people using written/typed report and electronic mail
- GS2.** use verbal communication skills to communicate with supervisor, cross-functional teams and auditors effectively
- GS3.** use critical thinking skills to interpret the various coding systems as per company norms and in identifying the non-compliance while performing the area inspection
- GS4.** apply customer centricity at work
- GS5.** apply problem-solving and decision making while dealing with any deviation

## Qualification Pack

### Assessment Criteria

| Assessment Criteria for Outcomes   | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| <i>sanitation activities before starting the work</i>  | <b>10</b>    | <b>10</b>       | <b>5</b>      | <b>5</b>   |
| <b>PC1.</b> inspect the area and machine, taking into account various surfaces   | -            | -               | -             | -          |
| <b>PC2.</b> check for cleaning validation tag on machines and accessories  | -            | -               | -             | -          |
| <b>PC3.</b> ensure to clean the area or machine part as per SOP, in case of any stain on floor or machine  | -            | -               | -             | -          |
| <b>PC4.</b> perform the cleaning validation in the presence of authorized personnel or QA inspector  | -            | -               | -             | -          |
| <b>PC5.</b> ensure that there is adequate ventilation for the work being carried out   | -            | -               | -             | -          |
| <b>PC6.</b> handle the cleaning material/reagent only after wearing the personal protective equipment required for the cleaning method                 | -            | -               | -             | -          |
| <b>PC7.</b> segregate and store the chemicals/ material with an appropriate label in designated places to avoid contamination                          | -            | -               | -             | -          |
| <i>Sanitation activities during work</i>   | <b>10</b>    | <b>20</b>       | <b>5</b>      | <b>5</b>   |
| <b>PC8.</b> deal with accidental spillage, if any, caused while carrying out the work and clean as per SOP   | -            | -               | -             | -          |
| <b>PC9.</b> segregate and store the intermediate material with an appropriate label in designated places to avoid contamination                        | -            | -               | -             | -          |
| <b>PC10.</b> report any additional cleaning requirement that is outside one's purview, to the appropriate person                                       | -            | -               | -             | -          |
| <b>PC11.</b> segregate, store and dispose of the rejected products or generated waste as per SOP under the supervision of supervisor and EHS personnel | -            | -               | -             | -          |
| <i>Sanitation activities after completion of work</i>  | <b>10</b>    | <b>10</b>       | <b>5</b>      | <b>5</b>   |



## Qualification Pack

| Assessment Criteria for Outcomes  | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <b>PC12.</b> ensure that there is no oily substance on the floor to avoid slippage  | -            | -               | -             | -          |
| <b>PC13.</b> ensure that no scrap material is lying around  | -            | -               | -             | -          |
| <b>PC14.</b> perform the cleaning of the equipment after every batch production as per SOP  | -            | -               | -             | -          |
| <b>PC15.</b> perform the cleaning validation of the equipment in the presence of designated authorized personnel and QA inspector                                     | -            | -               | -             | -          |
| <b>PC16.</b> ensure that, on completion of the work, the area is left clean and dry and meets WHO and cGMP requirements of sanitized premises                         | -            | -               | -             | -          |
| <b>PC17.</b> place the trolley, equipment, materials and personal protective equipment at the designated place after use, ensuring they are clean and securely stored | -            | -               | -             | -          |
| <b>PC18.</b> dispose of the waste garnered from the activity as per SOP   | -            | -               | -             | -          |
| <b>PC19.</b> dispose of used and un-used solutions according to manufacturer's instructions, and clean the equipment thoroughly                                       | -            | -               | -             | -          |
| <b>NOS Total</b>  | <b>30</b>    | <b>40</b>       | <b>15</b>     | <b>15</b>  |



## Qualification Pack

### National Occupational Standards (NOS) Parameters

|                            |  |
|----------------------------|--|
| <b>NOS Code</b>            | LFS/N0113  |
| <b>NOS Name</b>            | Ensure a hygienic and clean work area to avoid contamination |
| <b>Sector</b>              | Life Sciences  |
| <b>Sub-Sector</b>          | Pharmaceutical, Bio Pharmaceutical, Contract Research        |
| <b>Occupation</b>          | Generic  |
| <b>NSQF Level</b>          | 4  |
| <b>Credits</b>             | 1.00   |
| <b>Version</b>             | 3.0  |
| <b>Last Reviewed Date</b>  | 17/12/2024   |
| <b>Next Review Date</b>    | 17/12/2027   |
| <b>NSQC Clearance Date</b> | 17/12/2024   |



## Qualification Pack

### LFS/N0104: Coordinate and communicate with Supervisor/ production chemist, teams and auditors

#### Description

This NOS unit is about coordinating with supervisor/ production chemist, teams, and auditors.

#### Scope

The scope covers the following :

- Coordination with supervisor/ production chemist
- Coordination with cross-functional teams
- Coordination with auditors
- Sensitivity towards all genders and people with disability

#### Elements and Performance Criteria

##### *Coordination with Supervisor / production chemist*

To be competent, the user/individual on the job must be able to:

- PC1.** work as per instructions given by reporting supervisor
- PC2.** seek guidance/advice from supervisor on production plan for meeting the timelines
- PC3.** communicate process-flow improvements, production defects received from the previous process, repairs and maintenance of equipment to reporting supervisor/ production chemist
- PC4.** ensure timely intimation to supervisor/ production chemist about planned absence/ illness/ dizziness during work/ critical issues requiring his/her intervention
- PC5.** coordinate with supervisor on work-related and behavioral feedback

##### *Coordination with cross-functional teams*

To be competent, the user/individual on the job must be able to:

- PC6.** support team members and colleagues of other departments in work
- PC7.** take handover from previous shift operator and give handover to next shift operator as per SOP
- PC8.** guide manufacturing and packaging assistants during production process
- PC9.** coordinate with warehouse team for material dispensing and issuance
- PC10.** coordinate with maintenance team for preventive and corrective maintenance, break down and calibration errors
- PC11.** coordinate with quality control team for sample collection and batch release
- PC12.** coordinate with QA for machine/ equipment validation at a routine interval as per SOP
- PC13.** provide inputs to the concerned stakeholders in periodic fence line review to detect non-compliance
- PC14.** coordinate with EHS team for any safety incident, accident and emergency

##### *Coordination with auditors*

To be competent, the user/individual on the job must be able to:

- PC15.** provide clear answers to the auditor's queries



## Qualification Pack

**PC16.** provide the required documents of performed activities and operations to auditors on time

**PC17.** maintain data integrity while responding to auditors and regulatory inspectors

*Sensitivity towards all genders and people with disability*

To be competent, the user/individual on the job must be able to:

**PC18.** respect all genders, religions, and caste

**PC19.** empathize with people with disability

**PC20.** offer support or help to a person with disability only when asked

**PC21.** Adhere to the guidelines laid in POSH Act

**PC22.** report any violation of prevention of sexual harassment (POSH) rules immediately to the POSH committee

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** the company's policies on the preferred language of communication, reporting and escalation policy

**KU2.** the reporting structure of the organization

**KU3.** types of audits in the life sciences sector for the manufacturing operations

**KU4.** the required regulatory and statutory compliance-related documentation

**KU5.** the guidelines for data integrity, ethics, and compliance in the life sciences industry

**KU6.** the guidelines laid on Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act

**KU7.** the methods of workplace communication

**KU8.** importance of team coordination

**KU9.** the types of possible disabilities among people with disability (PwD)

**KU10.** the challenges faced by PwD

**KU11.** the importance of displaying empathy towards PwD

**KU12.** the right way to use the laws, acts, and provisions defined for PwD by the statutory bodies

**KU13.** the importance of awareness for gender sensitization and prevention of sexual harassment (POSH) act

**KU14.** importance of respecting all gender identities, religion, caste, and culture

**KU15.** method to receive the performance feedback

## Generic Skills (GS)

User/individual on the job needs to know how to:

**GS1.** use reading and comprehension skills to gauge the relevant information manuals, SOPs, health and safety instructions, memos, reports, job cards, and notes/ comments

**GS2.** use written communication skills to record and communicate details of work done to appropriate stakeholders by using written or computer-based record/ electronic mail in a given format and compliant with ALCOA principle





### Qualification Pack

- GS3.** use verbal communication skills to communicate confidential and sensitive information discretely to the authorized person while interacting with teammates
- GS4.** use team-building skills during the interaction with teammates while managing the difficult/stressful or emotional situations at work
- GS5.** apply problem-solving skills to find solutions for workflow-related difficulties
- GS6.** apply critical thinking skills to analyze and identify when to report an issue/concern to the supervisor and to deal with a colleague individually, depending on the type of concern
- GS7.** apply customer-centricity skills while responding to auditors and QA personnel

## Qualification Pack

### Assessment Criteria

| Assessment Criteria for Outcomes   | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| <i>Coordination with Supervisor / production chemist</i>   | <b>10</b>    | <b>10</b>       | <b>5</b>      | <b>5</b>   |
| <b>PC1.</b> work as per instructions given by reporting supervisor   | -            | -               | -             | -          |
| <b>PC2.</b> seek guidance/advice from supervisor on production plan for meeting the timelines  | -            | -               | -             | -          |
| <b>PC3.</b> communicate process-flow improvements, production defects received from the previous process, repairs and maintenance of equipment to reporting supervisor/ production chemist | -            | -               | -             | -          |
| <b>PC4.</b> ensure timely intimation to supervisor/ production chemist about planned absence/ illness/ dizziness during work/ critical issues requiring his/her intervention               | -            | -               | -             | -          |
| <b>PC5.</b> coordinate with supervisor on work-related and behavioral feedback   | -            | -               | -             | -          |
| <i>Coordination with cross-functional teams</i>  | <b>10</b>    | <b>10</b>       | <b>5</b>      | <b>5</b>   |
| <b>PC6.</b> support team members and colleagues of other departments in work   | -            | -               | -             | -          |
| <b>PC7.</b> take handover from previous shift operator and give handover to next shift operator as per SOP   | -            | -               | -             | -          |
| <b>PC8.</b> guide manufacturing and packaging assistants during production process   | -            | -               | -             | -          |
| <b>PC9.</b> coordinate with warehouse team for material dispensing and issuance  | -            | -               | -             | -          |
| <b>PC10.</b> coordinate with maintenance team for preventive and corrective maintenance, break down and calibration errors   | -            | -               | -             | -          |
| <b>PC11.</b> coordinate with quality control team for sample collection and batch release  | -            | -               | -             | -          |
| <b>PC12.</b> coordinate with QA for machine/ equipment validation at a routine interval as per SOP   | -            | -               | -             | -          |

### Qualification Pack

| Assessment Criteria for Outcomes  | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <b>PC13.</b> provide inputs to the concerned stakeholders in periodic fence line review to detect non-compliance    | -            | -               | -             | -          |
| <b>PC14.</b> coordinate with EHS team for any safety incident, accident and emergency                               | -            | -               | -             | -          |
| <i>Coordination with auditors</i>   | <b>10</b>    | <b>10</b>       | <b>5</b>      | <b>5</b>   |
| <b>PC15.</b> provide clear answers to the auditor's queries   | -            | -               | -             | -          |
| <b>PC16.</b> provide the required documents of performed activities and operations to auditors on time              | -            | -               | -             | -          |
| <b>PC17.</b> maintain data integrity while responding to auditors and regulatory inspectors                         | -            | -               | -             | -          |
| <i>Sensitivity towards all genders and people with disability</i>   | <b>3</b>     | <b>3</b>        | <b>2</b>      | <b>2</b>   |
| <b>PC18.</b> respect all genders, religions, and caste  | -            | -               | -             | -          |
| <b>PC19.</b> empathize with people with disability  | -            | -               | -             | -          |
| <b>PC20.</b> offer support or help to a person with disability only when asked                                      | -            | -               | -             | -          |
| <b>PC21.</b> Adhere to the guidelines laid in POSH Act  | -            | -               | -             | -          |
| <b>PC22.</b> report any violation of prevention of sexual harassment (POSH) rules immediately to the POSH committee | -            | -               | -             | -          |
| <b>NOS Total</b>  | <b>33</b>    | <b>33</b>       | <b>17</b>     | <b>17</b>  |



## Qualification Pack

### National Occupational Standards (NOS) Parameters

|                            |  |
|----------------------------|--|
| <b>NOS Code</b>            | LFS/N0104  |
| <b>NOS Name</b>            | Coordinate and communicate with Supervisor/ production chemist, teams and auditors |
| <b>Sector</b>              | Life Sciences  |
| <b>Sub-Sector</b>          | Pharmaceutical, Bio Pharmaceutical, Contract Research                              |
| <b>Occupation</b>          | Generic  |
| <b>NSQF Level</b>          | 4  |
| <b>Credits</b>             | 1.00   |
| <b>Version</b>             | 4.0  |
| <b>Last Reviewed Date</b>  | 17/12/2024   |
| <b>Next Review Date</b>    | 17/12/2027   |
| <b>NSQC Clearance Date</b> | 17/12/2024   |



## Qualification Pack

### DGT/VSQ/N0102: Employability Skills (60 Hours)

#### Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

#### Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Career Development & Goal Setting
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

#### Elements and Performance Criteria

##### *Introduction to Employability Skills*

To be competent, the user/individual on the job must be able to:

- PC1.** identify employability skills required for jobs in various industries
- PC2.** identify and explore learning and employability portals

##### *Constitutional values – Citizenship*

To be competent, the user/individual on the job must be able to:

- 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

##### *Becoming a Professional in the 21st Century*

To be competent, the user/individual on the job must be able to:

- 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

##### *Basic English Skills*

To be competent, the user/individual on the job must be able to:



## Qualification Pack

- 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

### *Career Development & Goal Setting*

To be competent, the user/individual on the job must be able to:

- PC10.** understand the difference between job and career
- PC11.** prepare a career development plan with short- and long-term goals, based on aptitude

### *Communication Skills*

To be competent, the user/individual on the job must be able to:

- PC12.** follow verbal and non-verbal communication etiquette and active listening techniques in various settings
- PC13.** work collaboratively with others in a team

### *Diversity & Inclusion*

To be competent, the user/individual on the job must be able to:

- PC14.** communicate and behave appropriately with all genders and PwD
- PC15.** escalate any issues related to sexual harassment at workplace according to POSH Act

### *Financial and Legal Literacy*

To be competent, the user/individual on the job must be able to:

- 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

### *Essential Digital Skills*

To be competent, the user/individual on the job must be able to:

- 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

### *Entrepreneurship*

To be competent, the user/individual on the job must be able to:

- 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

### *Customer Service*

To be competent, the user/individual on the job must be able to:

- PC26.** identify different types of customers
- PC27.** identify and respond to customer requests and needs in a professional manner.



## Qualification Pack

**PC28.** follow appropriate hygiene and grooming standards

*Getting ready for apprenticeship & Jobs*

To be competent, the user/individual on the job must be able to:

**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

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** need for employability skills and different learning and employability related portals

**KU2.** various constitutional and personal values

**KU3.** different environmentally sustainable practices and their importance

**KU4.** Twenty first (21st) century skills and their importance

**KU5.** how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up

**KU6.** importance of career development and setting long- and short-term goals

**KU7.** about effective communication

**KU8.** POSH Act

**KU9.** Gender sensitivity and inclusivity

**KU10.** different types of financial institutes, products, and services

**KU11.** how to compute income and expenditure

**KU12.** importance of maintaining safety and security in offline and online financial transactions

**KU13.** different legal rights and laws

**KU14.** different types of digital devices and the procedure to operate them safely and securely

**KU15.** how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.

**KU16.** how to identify business opportunities

**KU17.** types and needs of customers

**KU18.** how to apply for a job and prepare for an interview

**KU19.** apprenticeship scheme and the process of registering on apprenticeship portal

## Generic Skills (GS)

User/individual on the job needs to know how to:

**GS1.** read and write different types of documents/instructions/correspondence

**GS2.** communicate effectively using appropriate language in formal and informal settings





## Qualification Pack

- GS3.** behave politely and appropriately with all
- GS4.** how to work in a virtual mode
- GS5.** perform calculations efficiently
- GS6.** solve problems effectively
- GS7.** pay attention to details
- GS8.** manage time efficiently
- GS9.** maintain hygiene and sanitization to avoid infection

## Qualification Pack

### Assessment Criteria

| Assessment Criteria for Outcomes   | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| <i>Introduction to Employability Skills</i>  | <b>1</b>     | <b>1</b>        | -             | -          |
| <b>PC1.</b> identify employability skills required for jobs in various industries  | -            | -               | -             | -          |
| <b>PC2.</b> identify and explore learning and employability portals  | -            | -               | -             | -          |
| <i>Constitutional values – Citizenship</i>   | <b>1</b>     | <b>1</b>        | -             | -          |
| <b>PC3.</b> 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.   | -            | -               | -             | -          |
| <b>PC4.</b> follow environmentally sustainable practices   | -            | -               | -             | -          |
| <i>Becoming a Professional in the 21st Century</i>   | <b>2</b>     | <b>4</b>        | -             | -          |
| <b>PC5.</b> recognize the significance of 21st Century Skills for employment   | -            | -               | -             | -          |
| <b>PC6.</b> 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>  | <b>2</b>     | <b>3</b>        | -             | -          |
| <b>PC7.</b> use basic English for everyday conversation in different contexts, in person and over the telephone  | -            | -               | -             | -          |
| <b>PC8.</b> read and understand routine information, notes, instructions, mails, letters etc. written in English   | -            | -               | -             | -          |
| <b>PC9.</b> write short messages, notes, letters, e-mails etc. in English  | -            | -               | -             | -          |
| <i>Career Development &amp; Goal Setting</i>   | <b>1</b>     | <b>2</b>        | -             | -          |

## Qualification Pack

| Assessment Criteria for Outcomes  | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <b>PC10.</b> understand the difference between job and career   | -            | -               | -             | -          |
| <b>PC11.</b> prepare a career development plan with short- and long-term goals, based on aptitude                     | -            | -               | -             | -          |
| <i>Communication Skills</i>   | <b>2</b>     | <b>2</b>        | -             | -          |
| <b>PC12.</b> follow verbal and non-verbal communication etiquette and active listening techniques in various settings | -            | -               | -             | -          |
| <b>PC13.</b> work collaboratively with others in a team   | -            | -               | -             | -          |
| <i>Diversity &amp; Inclusion</i>  | <b>1</b>     | <b>2</b>        | -             | -          |
| <b>PC14.</b> communicate and behave appropriately with all genders and PwD  | -            | -               | -             | -          |
| <b>PC15.</b> escalate any issues related to sexual harassment at workplace according to POSH Act                      | -            | -               | -             | -          |
| <i>Financial and Legal Literacy</i>   | <b>2</b>     | <b>3</b>        | -             | -          |
| <b>PC16.</b> select financial institutions, products and services as per requirement                                  | -            | -               | -             | -          |
| <b>PC17.</b> carry out offline and online financial transactions, safely and securely                                 | -            | -               | -             | -          |
| <b>PC18.</b> identify common components of salary and compute income, expenses, taxes, investments etc                | -            | -               | -             | -          |
| <b>PC19.</b> identify relevant rights and laws and use legal aids to fight against legal exploitation                 | -            | -               | -             | -          |
| <i>Essential Digital Skills</i>   | <b>3</b>     | <b>4</b>        | -             | -          |
| <b>PC20.</b> operate digital devices and carry out basic internet operations securely and safely                      | -            | -               | -             | -          |
| <b>PC21.</b> use e- mail and social media platforms and virtual collaboration tools to work effectively               | -            | -               | -             | -          |
| <b>PC22.</b> use basic features of word processor, spreadsheets, and presentations                                    | -            | -               | -             | -          |

### Qualification Pack

| Assessment Criteria for Outcomes   | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| <i>Entrepreneurship</i>  | <b>2</b>     | <b>3</b>        | -             | -          |
| <b>PC23.</b> identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research                                       | -            | -               | -             | -          |
| <b>PC24.</b> develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion  | -            | -               | -             | -          |
| <b>PC25.</b> identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity   | -            | -               | -             | -          |
| <i>Customer Service</i>  | <b>1</b>     | <b>2</b>        | -             | -          |
| <b>PC26.</b> identify different types of customers   | -            | -               | -             | -          |
| <b>PC27.</b> identify and respond to customer requests and needs in a professional manner.   | -            | -               | -             | -          |
| <b>PC28.</b> follow appropriate hygiene and grooming standards   | -            | -               | -             | -          |
| <i>Getting ready for apprenticeship &amp; Jobs</i>   | <b>2</b>     | <b>3</b>        | -             | -          |
| <b>PC29.</b> create a professional Curriculum vitae (Résumé)   | -            | -               | -             | -          |
| <b>PC30.</b> search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively | -            | -               | -             | -          |
| <b>PC31.</b> apply to identified job openings using offline /online methods as per requirement   | -            | -               | -             | -          |
| <b>PC32.</b> answer questions politely, with clarity and confidence, during recruitment and selection  | -            | -               | -             | -          |
| <b>PC33.</b> identify apprenticeship opportunities and register for it as per guidelines and requirements  | -            | -               | -             | -          |
| <b>NOS Total</b>   | <b>20</b>    | <b>30</b>       | -             | -          |



## Qualification Pack

### National Occupational Standards (NOS) Parameters

|                            |                                 |
|----------------------------|---------------------------------|
| <b>NOS Code</b>            | DGT/VSQ/N0102                   |
| <b>NOS Name</b>            | Employability Skills (60 Hours) |
| <b>Sector</b>              | Cross Sectoral                  |
| <b>Sub-Sector</b>          | Professional Skills             |
| <b>Occupation</b>          | Employability                   |
| <b>NSQF Level</b>          | 4                               |
| <b>Credits</b>             | 2                               |
| <b>Version</b>             | 1.0                             |
| <b>Last Reviewed Date</b>  | 08/05/2025                      |
| <b>Next Review Date</b>    | 08/05/2028                      |
| <b>NSQC Clearance Date</b> | 08/05/2025                      |



## Qualification Pack

# LFS/N0267: Perform sterile Bulk drug API/ manufacturing and primary packaging operations

## Description

This NOS unit is about machine operator performing Sterile Bulk Drug / API manufacturing and primary packaging operations

## Scope

The scope covers the following :

- Maintain aseptic conditions
- Perform aseptic manufacturing and primary packaging
- Reporting and escalation of deviations
- Documentation
- Post-production critical activities

## Elements and Performance Criteria

### *Maintain aseptic conditions*

To be competent, the user/individual on the job must be able to:

- PC1.** wear personal protective equipment (PPE) before entering into the production area as per SOP
- PC2.** perform sanitization and sterilization as per clean room guidelines
- PC3.** inspect in-line equipment/ balance as per the SOP
- PC4.** start the equipment safely and ensure cleaning-in-place (CIP) and sterilization-in-place (SIP) are done
- PC5.** perform cleaning validation under supervision
- PC6.** maintain aseptic conditions and clean room parameters in the classified area to avoid cross contamination

### *Perform aseptic manufacturing and primary packaging*

To be competent, the user/individual on the job must be able to:

- PC7.** identify approved labeled Raw Materials(RM) and handle appropriately to avoid contamination
- PC8.** charge the reactors with RM in the correct pattern as per the Batch Manufacturing Record (BMR) to minimize material overflow/wastage/excess flash/spill
- PC9.** operate reactor and utilities (Steam/Water for Pharmaceutical Use (WPU)/Water for Injections (WFI) /Distilled Water (DW)/ Gases) as per BMR and Standard Operating Procedure (SOP)
- PC10.** maintain critical process parameters of reactor and utility systems as per BMR
- PC11.** perform a total range of in-process checks specified in BMR to ensure that the intermediate/final product coming out from the process manufacturing meets the specifications
- PC12.** perform sterilization process of final product



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- PC13.** perform filling and containerization process using QA approved sterilized containers and closures

### *Reporting and escalation of deviations*

To be competent, the user/individual on the job must be able to:

- PC14.** identify non-conformities to quality assurance standards and product specifications
- PC15.** identify potential causes of non-conformities to quality assurance standards with the help of supervisor/ production chemist/ biologist
- PC16.** report and escalate the deviations as per the escalation matrix and SOP
- PC17.** implement the corrective and preventive actions as guided by the production chemist/ biologist and quality assurance team

### *Documentation*

To be competent, the user/individual on the job must be able to:

- PC18.** perform concurrent documentation as per BMR and SOP
- PC19.** ensure adherence to data integrity
- PC20.** maintain both electronic and manual records in the log books and other documentation required as per GMP and GDP like – breakdown time, daily manufacturing record, yield report, equipment log book etc.

### *Post-production critical activities*

To be competent, the user/individual on the job must be able to:

- PC21.** carry out status labelling and segregation of material/ intermediate/ finished goods of sterile API as per SOPs
- PC22.** label finished goods containers of sterile API in compliance with regulatory guidelines
- PC23.** segregate batchwise packaged and sealed sterile API containers on pallets for storage and transportation in warehouse
- PC24.** segregate waste and perform disposal under supervision
- PC25.** provide support for line clearance before the next batch of sterile API is produced and packaged
- PC26.** handover the work/ equipment to colleague in next shift in adherence of the shift schedule

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** clean room behavior practices and gowning procedures for aseptic manufacturing
- KU2.** SOP for entry and exit from GMP area
- KU3.** PPE used in sterile API manufacturing and their work instructions
- KU4.** material segregation, handling, and storage guidelines for sterile drugs
- KU5.** types of reactors for sterile API/ Bulk drug manufacturing, their operating process and critical parameters
- KU6.** manufacturing process of Water for Pharma Use (WPU)/ Water for injections (WFI) / Distilled Water (DW)
- KU7.** utilities in Sterile API/ Bulk drug manufacturing plant
- KU8.** in-process checks for Sterile API/ Bulk drug manufacturing



## Qualification Pack

- KU9.** labelling guidelines as per cGMP
- KU10.** procedures for documentation, reporting and escalation of incidents and deviations
- KU11.** procedure for generating electronic records
- KU12.** basics of ALCOA principles, data integrity and information security rules
- KU13.** procedure for line clearance
- KU14.** procedure for handover and takeover
- KU15.** procedure of CIP and SIP
- KU16.** procedure for sterilization of material, drug products and equipment
- KU17.** primary packaging guidelines for sterile bulk drug products

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** use reading and comprehension skills to extract the relevant information from manuals, SOPs, health and safety instructions, memos, reports, job cards, and notes/comments
- GS2.** use written communication skills to maintain proper and concise records as per given format and compliant with ALCOA principle
- GS3.** use verbal communication skills in communicating the details of work done to appropriate people and during interaction with regulatory inspectors and other teammates
- GS4.** use planning and organizing skills in every activity planned and performed in manufacturing operations and to achieve resource optimization
- GS5.** apply problem-solving skills to find solutions for workflow-related difficulties
- GS6.** apply critical thinking skills to analyze and identify when to report an issue/concern to the supervisor and to deal with a colleague individually, depending on the type of concern
- GS7.** use critical thinking skills in analyzing impact of deviations, wastage and rejects to the environment and efficiency, compliance and cost
- GS8.** apply decision making while making necessary adjustments in parameters to achieve quality specifications
- GS9.** apply customer-centricity while responding to auditors and QA personnel





## Qualification Pack

### Assessment Criteria

| Assessment Criteria for Outcomes   | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| <i>Maintain aseptic conditions</i>   | <b>2</b>     | <b>3</b>        | <b>2</b>      | <b>3</b>   |
| <b>PC1.</b> wear personal protective equipment (PPE) before entering into the production area as per SOP   | -            | -               | -             | -          |
| <b>PC2.</b> perform sanitization and sterilization as per clean room guidelines  | -            | -               | -             | -          |
| <b>PC3.</b> inspect in-line equipment/ balance as per the SOP  | -            | -               | -             | -          |
| <b>PC4.</b> start the equipment safely and ensure cleaning-in-place (CIP) and sterilization-in-place (SIP) are done  | -            | -               | -             | -          |
| <b>PC5.</b> perform cleaning validation under supervision  | -            | -               | -             | -          |
| <b>PC6.</b> maintain aseptic conditions and clean room parameters in the classified area to avoid cross contamination  | -            | -               | -             | -          |
| <i>Perform aseptic manufacturing and primary packaging</i>   | <b>8</b>     | <b>12</b>       | <b>8</b>      | <b>12</b>  |
| <b>PC7.</b> identify approved labeled Raw Materials(RM) and handle appropriately to avoid contamination  | -            | -               | -             | -          |
| <b>PC8.</b> charge the reactors with RM in the correct pattern as per the Batch Manufacturing Record (BMR) to minimize material overflow/wastage/excess flash/spill                            | -            | -               | -             | -          |
| <b>PC9.</b> operate reactor and utilities (Steam/Water for Pharmaceutical Use (WPU)/Water for Injections (WFI) /Distilled Water (DW)/ Gases) as per BMR and Standard Operating Procedure (SOP) | -            | -               | -             | -          |
| <b>PC10.</b> maintain critical process parameters of reactor and utility systems as per BMR  | -            | -               | -             | -          |
| <b>PC11.</b> perform a total range of in-process checks specified in BMR to ensure that the intermediate/final product coming out from the process manufacturing meets the specifications      | -            | -               | -             | -          |
| <b>PC12.</b> perform sterilization process of final product  | -            | -               | -             | -          |

## Qualification Pack

| Assessment Criteria for Outcomes   | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|--|--------------|-----------------|---------------|------------|
| <b>PC13.</b> perform filling and containerization process using QA approved sterilized containers and closures   | -            | -               | -             | -          |
| <i>Reporting and escalation of deviations</i>  | <b>2</b>     | <b>3</b>        | <b>2</b>      | <b>3</b>   |
| <b>PC14.</b> identify non-conformities to quality assurance standards and product specifications   | -            | -               | -             | -          |
| <b>PC15.</b> identify potential causes of non-conformities to quality assurance standards with the help of supervisor/ production chemist/ biologist   | -            | -               | -             | -          |
| <b>PC16.</b> report and escalate the deviations as per the escalation matrix and SOP   | -            | -               | -             | -          |
| <b>PC17.</b> implement the corrective and preventive actions as guided by the production chemist/ biologist and quality assurance team   | -            | -               | -             | -          |
| <i>Documentation</i>   | <b>4</b>     | <b>6</b>        | <b>4</b>      | <b>6</b>   |
| <b>PC18.</b> perform concurrent documentation as per BMR and SOP   | -            | -               | -             | -          |
| <b>PC19.</b> ensure adherence to data integrity  | -            | -               | -             | -          |
| <b>PC20.</b> maintain both electronic and manual records in the log books and other documentation required as per GMP and GDP like – breakdown time, daily manufacturing record, yield report, equipment log book etc. | -            | -               | -             | -          |
| <i>Post-production critical activities</i>   | <b>4</b>     | <b>6</b>        | <b>4</b>      | <b>6</b>   |
| <b>PC21.</b> carry out status labelling and segregation of material/ intermediate/ finished goods of sterile API as per SOPs   | -            | -               | -             | -          |
| <b>PC22.</b> label finished goods containers of sterile API in compliance with regulatory guidelines   | -            | -               | -             | -          |
| <b>PC23.</b> segregate batchwise packaged and sealed sterile API containers on pallets for storage and transportation in warehouse   | -            | -               | -             | -          |
| <b>PC24.</b> segregate waste and perform disposal under supervision  | -            | -               | -             | -          |



### Qualification Pack

| Assessment Criteria for Outcomes  | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|--------------|-----------------|---------------|------------|
| <b>PC25.</b> provide support for line clearance before the next batch of sterile API is produced and packaged | -            | -               | -             | -          |
| <b>PC26.</b> handover the work/ equipment to colleague in next shift in adherence of the shift schedule       | -            | -               | -             | -          |
| <b>NOS Total</b>  | <b>20</b>    | <b>30</b>       | <b>20</b>     | <b>30</b>  |



## Qualification Pack

### National Occupational Standards (NOS) Parameters

|                            |   |
|----------------------------|---|
| <b>NOS Code</b>            | LFS/N0267   |
| <b>NOS Name</b>            | Perform sterile Bulk drug API/ manufacturing and primary packaging operations |
| <b>Sector</b>              | Life Sciences   |
| <b>Sub-Sector</b>          | Pharmaceutical, Bio Pharmaceutical  |
| <b>Occupation</b>          | Manufacturing   |
| <b>NSQF Level</b>          | 4   |
| <b>Credits</b>             | 3.00  |
| <b>Version</b>             | 3.0   |
| <b>Last Reviewed Date</b>  | 17/12/2024  |
| <b>Next Review Date</b>    | 17/12/2027  |
| <b>NSQC Clearance Date</b> | 17/12/2024  |

## Assessment Guidelines and Assessment Weightage

### Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by Life Sciences Sector Skill Development Council (LSSSDC)
2. Each Element will be assigned marks proportional to its importance in NOS. LSSSDC will also lay down the proportion of marks for Theory, Practical, Project, and Viva for each Element.
3. The assessment for the theory part will be based on the knowledge bank of questions created by the LSSSDC.
4. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
5. LSSSDC as an assessment and awarding body will create unique evaluations for each assessment component i.e. theory, practical, project and viva for every student at each examination/training center based on this criterion.
6. Wherever any assessment component is not applicable/ feasible, the balance assessment components will be used to assess the candidate and accordingly the total marks will be calculated only for the applied



## Qualification Pack

assessment component.

7.To pass the Qualification Pack, every trainee should score a minimum of 50%-70% of marks in each NOS (depending on NSQF Level) to successfully clear the assessment. In the case of a Govt funded program, the program guidelines will be overarching on the pass percentage rules.

### Minimum Aggregate Passing % at QP Level : 70

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

### Minimum Passing % at NOS Level: 70

(Please note: A Trainee must score the minimum percentage for each NOS separately as well as on the QP as a whole.)

## Assessment Weightage

Compulsory NOS

| National Occupational Standards   | Theory Marks | Practical Marks | Project Marks | Viva Marks | Total Marks | Weightage |
|---|--------------|-----------------|---------------|------------|-------------|-----------|
| LFS/N0274.Discuss about Life Sciences Industry and Basics of manufacturing Operations                             | 40           | 30              | 15            | 15         | 100         | 5         |
| LFS/N0213.Perform pre-production checks and prepare Equipment for bulk drug production                            | 21           | 32              | 17            | 30         | 100         | 10        |
| LFS/N0112.Adherence to Environment, health and safety guidelines in a production facility and GMP controlled area | 30           | 40              | 15            | 15         | 100         | 20        |
| LFS/N0265.Maintain compliance with current Good Manufacturing Practices (cGMP) and other regulations              | 27           | 33              | 21            | 19         | 100         | 10        |
| LFS/N0113.Ensure a hygienic and clean work area to avoid contamination  | 30           | 40              | 15            | 15         | 100         | 10        |



### Qualification Pack

| National Occupational Standards  | Theory Marks | Practical Marks | Project Marks | Viva Marks | Total Marks | Weightage |
|--|--------------|-----------------|---------------|------------|-------------|-----------|
| LFS/N0104.Coordinate and communicate with Supervisor/ production chemist, teams and auditors | 33           | 33              | 17            | 17         | 100         | 10        |
| DGT/VSQ/N0102.Employability Skills (60 Hours)  | 20           | 30              | -             | -          | 50          | 5         |
| <b>Total</b>   | <b>201</b>   | <b>238</b>      | <b>100</b>    | <b>111</b> | <b>650</b>  | <b>70</b> |

Elective: 1 Sterile Manufacturing and Packaging

| National Occupational Standards   | Theory Marks | Practical Marks | Project Marks | Viva Marks | Total Marks | Weightage |
|---|--------------|-----------------|---------------|------------|-------------|-----------|
| LFS/N0267.Perform sterile Bulk drug API/ manufacturing and primary packaging operations | 20           | 30              | 20            | 30         | 100         | 30        |
| <b>Total</b>  | <b>20</b>    | <b>30</b>       | <b>20</b>     | <b>30</b>  | <b>100</b>  | <b>30</b> |