Qualification Pack

Multi Skill Technician- Fruits & Vegetables

QP Code: FIC/Q0205

Version: 1.0

NSQF Level: 3

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Qualification Pack

FIC/Q0205: Multi Skill Technician- Fruits & Vegetables

Brief Job Description

A Multi Skill Technician is able to perform multiple roles like sorting, grading, processing, and canning various types of fruits and vegetables to produce pickles, jam, jelly, squash, ketchup, and juices. The individual monitors equipment performance to ascertain proper utilization and carries out preventive maintenance in a processing unit in compliance with the food safety standards of the organization.

Personal Attributes

A Multi Skill Technician must have the ability to plan, organize, prioritize, calculate, and handle pressure. In addition, the individual must have the stamina to be able to stand for long hours, have personal and professional hygiene and an understanding of food safety standards.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. FIC/N0111: Produce jam, jelly and ketchup
2. FIC/N0122: Produce fruit pulp from various fruits
3. FIC/N0203: Carry out preservation of fruits and vegetables
4. FIC/N0204: Carry out production of various types of pickles and pastes
5. FIC/N0129: Sort and grade produce
6. FIC/N0103: Produce Squash and Juice
7. FIC/N9901: Implement health and safety practices at the workplace
8. DGT/VSQ/N0102: Employability Skills (60 Hours)

Qualification Pack (QP) Parameters

Sector	Food Processing
Sub-Sector	Fruits and Vegetables
Occupation	Processing-Fruits and Vegetables
Country	India

Qualification Pack

NSQF Level	3
Credits	2
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8160.2300,2400, 7514.1000
Minimum Educational Qualification & Experience	10th Class OR 8th Class with 2 Years of experience relevant experience OR 5th Class with 5 Years of experience relevant experience OR Certificate-NSQF (Previous relevant qualification of level-2) with 1 Year of experience relevant experience OR Certificate-NSQF (Previous relevant qualification of Level 2.5) with 6 Months of experience
Minimum Level of Education for Training in School	5th Class
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	23/06/2026
NSQC Approval Date	23/06/2023
Version	1.0
Reference code on NQR	QG-03-AG-00580-2023-V1-FICSI
NQR Version	1.0

FIC/N0111: Produce jam, jelly and ketchup

Description

This unit is about production of jam, jelly and ketchup using various machineries as per the specifications and standards of the organization

Scope

The scope covers the following :

- Prepare jam and jelly
- Prepare ketchup
- Fill and pack jam, jelly and ketchup
- Carry out post-production cleaning and regular maintenance of equipment

Elements and Performance Criteria

Prepare jam and jelly

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

PC1. transfer measured quantity of fruit pulp/juice from the holding tank/container into cooking kettle/tank for preparing jam/jelly (pulp of various fruit as per formulation for preparing mixed fruit jam)

PC2. heat fruit pulp/fruit juice to the required temperature and concentration

PC3. stir the pulp continuously to avoid sticking/scorching

PC4. monitor pressure and temperature gauge and adjust controls to achieve specified pressure and temperature to cook fruit pulp / fruit juice

PC5. transfer measured quantity of water into pre-mixing tank

PC6. measure specified quantity of pectin/gelatin and water as per formulation and add to the pre-mixing tank with uniform stirring to prepare pectin/gelatin solution

PC7. measure and add the ingredients into pulp/juice in the kettle/tank for the batch preparation as per the formulation chart

PC8. • operate the cooker and set the controls of cooker.
• Controls: Temperature, pressure, etc.

PC9. transfer the solution at a specific brix and temperature into the cooker for cooking at higher temperature and pressure

PC10. observe the cooking process and check the product in refractometer to ensure completeness of cooking process

PC11. check the quality of cooked product through physical parameters such as colour, appearance, texture, taste, etc.

PC12. take sample and send to the quality lab for analysis

PC13. transfer the heated product manually/automatically into hopper of the bottled Jam/jelly packaging

PC14. transfer heated product manually/automatically into the hopper of filling/moulding machine of jelly making

PC15. monitor the moulding process and inspect the jellies for shapes, sizes and weights as per organizational standards and adjust the controls, as required

PC16. adjust the speed of cooling conveyor & fans and cool the moulded jellies to an appropriate temperature for packaging

PC17. inspect the defective jellies and re-use them as a rework in specified quantity and heat with the pulp (discard the foreign matter contaminated jellies with organizational procedure)

PC18. transfer the good jellies to the packaging machine either automatically through packing conveyors or manually by crates/containers

Prepare ketchup

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

PC19. transfer measured quantity of tomato pulp/puree from holding tank/ container to cooking kettle

PC20. heat tomatoes paste to required temperature and thickness by opening the valves to admit steam through the kettle or light burner with continuous stirring to avoid sticking/scorching or stir manually

PC21. measure ingredients such as sugar, salt, spice powder, vinegar, etc. required for batch as per the formulation chart

PC22. add the measured ingredients as per the sequence into the tomato pulp/puree in kettle following SOP and continue pre-cooking

PC23. observe pre-cooking process and check the quality of pre-cooked product through feel, consistency, refractometer, colour, etc.

PC24. transfer pre-cooked material at a specific brix and temperature into the cooker for cooking at higher temperature and pressure

PC25. observe the cooking process and check the product in refractometer to ensure completeness of cooking process

PC26. check the quality of cooked product through physical parameters such as colour, appearance, texture, taste, etc.

PC27. take the sample and send it to the quality lab for analysis and conformance to standards

PC28. transfer product into filling tank/hopper of the packaging machine or manually filling hot product in packaging containers

Fill and pack jam, jelly and ketchup

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

PC29. transfer the heated jam/jelly/moulded jelly/heated ketchup into the packaging machine to pack jam/jelly/ketchup by operating valves and pump

PC30. load packing materials such as glass bottle, plastic bottle, pouches, laminates, Jars, etc. and sealing materials such as lid, closures, etc. on packaging machines

PC31. set packaging machine for filling volume, speed, size etc.

PC32. start automatic packaging machine for forming, washing bottles, filling, sealing container (or) fill measured quantity of hot product in packaging containers, place lid and close manually or mechanically

PC33. start machine to fill hot products/jellies in the container/jars/laminates/bottles and check weight of packed products periodically to ensure its conformance to standards

PC34. spray water on containers to cool and set product (setting in case of jam and jelly) or arrange filled jam/jelly containers in rack and allow to stand for specified time following SOP to cool

PC35. • dry the cooled bottles by allowing the cooled bottles to pass through the drying tunnel by setting controls of air dryer before labelling
• Set controls: Air temperature, air flow rate, etc.

PC36. load labels in labelling machine, set date, batch coding, date of manufacture, best before date, etc.

PC37. place the packed and labelled products in cartons and transfer to storage area maintaining storage conditions as per the SOP

PC38. report discrepancies/concerns to department supervisor for immediate action

Carry out post-production cleaning and regular maintenance of equipment

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

PC39. clean the work area, machineries, equipment and tools using approved cleaning agents and sanitizers

PC40. attend minor repairs/faults of all machines (if any)

PC41. ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment as per the SOP or supplier's instructions/manuals

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. ingredients used in preparing ketchup such as sugar, salt, spice powder, vinegar, etc.

KU2. operating procedure for cooking kettle

KU3. method to test the viscosity of the ketchup using viscometer

KU4. procedure to operate packaging machine

KU5. SOP to load labels in labelling machine

KU6. procedure to set date coding machine for batch number, date of manufacture, date of expiry, etc.

KU7. food safety and hygiene as per organisational policies

KU8. SOP to clarify fruit juice

KU9. procedure to prepare clarify fruit juice squash

KU10. transfer process of finished product to the filling tank

KU11. SOP to wash bottle/plastic containers to fill measured quantity of finished products

KU12. post-production cleaning and regular maintenance procedures of the equipment

Generic Skills (GS)

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

GS1. note down the information communicated by the senior/supervisor, raw materials used for production and the finished products produced, readings of the process parameters and provide necessary information to fill the process chart, down observations (if any) related to the process

GS2. read and interpret equipment manuals and process documents to understand the equipments operation and process requirement, and internal information documents sent by internal teams, etc.

GS3. write information documents to internal departments/internal teams

GS4. plan, prioritize, and sequence work operations

GS5. communicate effectively with the team members, senior/supervisor, and other departments

GS6. discuss task lists, schedules, and activities with the senior/supervisor

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare jam and jelly	**19**	**24**	**-**	**-**
PC1. transfer measured quantity of fruit pulp/juice from the holding tank/container into cooking kettle/tank for preparing jam/jelly (pulp of various fruit as per formulation for preparing mixed fruit jam)	-	-	-	-
PC2. heat fruit pulp/fruit juice to the required temperature and concentration	-	-	-	-
PC3. stir the pulp continuously to avoid sticking/scorching	-	-	-	-
PC4. monitor pressure and temperature gauge and adjust controls to achieve specified pressure and temperature to cook fruit pulp / fruit juice	-	-	-	-
PC5. transfer measured quantity of water into pre-mixing tank	-	-	-	-
PC6. measure specified quantity of pectin/gelatin and water as per formulation and add to the pre-mixing tank with uniform stirring to prepare pectin/gelatin solution	-	-	-	-
PC7. measure and add the ingredients into pulp/juice in the kettle/tank for the batch preparation as per the formulation chart	-	-	-	-
PC8. • operate the cooker and set the controls of cooker. • Controls: Temperature, pressure, etc.	-	-	-	-
PC9. transfer the solution at a specific brix and temperature into the cooker for cooking at higher temperature and pressure	-	-	-	-
PC10. observe the cooking process and check the product in refractometer to ensure completeness of cooking process	-	-	-	-
PC11. check the quality of cooked product through physical parameters such as colour, appearance, texture, taste, etc.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. take sample and send to the quality lab for analysis	-	-	-	-
PC13. transfer the heated product manually/automatically into hopper of the bottled Jam/jelly packaging	-	-	-	-
PC14. transfer heated product manually/automatically into the hopper of filling/moulding machine of jelly making	-	-	-	-
PC15. monitor the moulding process and inspect the jellies for shapes, sizes and weights as per organizational standards and adjust the controls, as required	-	-	-	-
PC16. adjust the speed of cooling conveyor & fans and cool the moulded jellies to an appropriate temperature for packaging	-	-	-	-
PC17. inspect the defective jellies and re-use them as a rework in specified quantity and heat with the pulp (discard the foreign matter contaminated jellies with organizational procedure)	-	-	-	-
PC18. transfer the good jellies to the packaging machine either automatically through packing conveyors or manually by crates/containers	-	-	-	-
Prepare ketchup	**10**	**13**	**-**	**-**
PC19. transfer measured quantity of tomato pulp/puree from holding tank/ container to cooking kettle	-	-	-	-
PC20. heat tomatoes paste to required temperature and thickness by opening the valves to admit steam through the kettle or light burner with continuous stirring to avoid sticking/scorching or stir manually	-	-	-	-
PC21. measure ingredients such as sugar, salt, spice powder, vinegar, etc. required for batch as per the formulation chart	-	-	-	-
PC22. add the measured ingredients as per the sequence into the tomato pulp/puree in kettle following SOP and continue pre-cooking	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC23. observe pre-cooking process and check the quality of pre-cooked product through feel, consistency, refractometer, colour, etc.	-	-	-	-
PC24. transfer pre-cooked material at a specific brix and temperature into the cooker for cooking at higher temperature and pressure	-	-	-	-
PC25. observe the cooking process and check the product in refractometer to ensure completeness of cooking process	-	-	-	-
PC26. check the quality of cooked product through physical parameters such as colour, appearance, texture, taste, etc.	-	-	-	-
PC27. take the sample and send it to the quality lab for analysis and conformance to standards	-	-	-	-
PC28. transfer product into filling tank/hopper of the packaging machine or manually filling hot product in packaging containers	-	-	-	-
Fill and pack jam, jelly and ketchup	**18**	**10**	**-**	**-**
PC29. transfer the heated jam/jelly/moulded jelly/heated ketchup into the packaging machine to pack jam/jelly/ketchup by operating valves and pump	-	-	-	-
PC30. load packing materials such as glass bottle, plastic bottle, pouches, laminates, Jars, etc. and sealing materials such as lid, closures, etc. on packaging machines	-	-	-	-
PC31. set packaging machine for filling volume, speed, size etc.	-	-	-	-
PC32. start automatic packaging machine for forming, washing bottles, filling, sealing container (or) fill measured quantity of hot product in packaging containers, place lid and close manually or mechanically	-	-	-	-
PC33. start machine to fill hot products/jellies in the container/jars/laminates/bottles and check weight of packed products periodically to ensure its conformance to standards	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC34. spray water on containers to cool and set product (setting in case of jam and jelly) or arrange filled jam/jelly containers in rack and allow to stand for specified time following SOP to cool	-	-	-	-
PC35. • dry the cooled bottles by allowing the cooled bottles to pass through the drying tunnel by setting controls of air dryer before labelling • Set controls: Air temperature, air flow rate, etc.	-	-	-	-
PC36. load labels in labelling machine, set date, batch coding, date of manufacture, best before date, etc.	-	-	-	-
PC37. place the packed and labelled products in cartons and transfer to storage area maintaining storage conditions as per the SOP	-	-	-	-
PC38. report discrepancies/concerns to department supervisor for immediate action	-	-	-	-
Carry out post-production cleaning and regular maintenance of equipment	**3**	**3**	**-**	**-**
PC39. clean the work area, machineries, equipment and tools using approved cleaning agents and sanitizers	-	-	-	-
PC40. attend minor repairs/faults of all machines (if any)	-	-	-	-
PC41. ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment as per the SOP or supplier's instructions/manuals	-	-	-	-
NOS Total	**50**	**50**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N0111
NOS Name	Produce jam, jelly and ketchup
Sector	Food Processing
Sub-Sector	Fruits and Vegetables
Occupation	Processing-Fruits and Vegetables
NSQF Level	3
Credits	TBD
Version	2.0
Last Reviewed Date	23/06/2023
Next Review Date	23/06/2026
NSQC Clearance Date	23/06/2023

FIC/N0122: Produce fruit pulp from various fruits

Description

This unit is about producing fruit pulp from a variety of fruits using various machinery as per the standards and the requirements of the organization.

Scope

The scope covers the following :

- Wash and sort the fruits
- Peel/De-seed/Destone the fruits
- Perform fruit pulp extraction and pre-cooking pulp activities
- Carry out aseptic sterilization and packing of fruit pulp
- Can fruit pulp
- Perform post-production cleaning and maintenance of equipment's

Elements and Performance Criteria

Wash and sort the fruits

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

PC1. dump fruits into the washing tank to remove dirt, soil, dust and unwanted sticky material, etc.

PC2. transfer fruits from the washing tank to the washing line conveyor using ladder conveyor

PC3. rinse fruits with a high-pressure spraying system

PC4. inspect and sort fruits visually and manually to remove damaged, blemished, and rotten fruits

Peel/De-seed/Destone the fruits

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

PC5. put sorted fruits in the peeler or corer (depending on the type of fruits)

PC6. remove the peel or core of the fruits

PC7. wash peeled fruits with pump water or open spraying system

PC8. observe the fruits emerging from the peeling/coring process and ensure removal of peel/core

PC9. dispose of or further process the peeled material/core separately as per organization standards, as appropriate

PC10. cut fruits manually in required size or load the fruits in the chopper/cutter/slicer machine

PC11. cut the fruit tip or peel manually, if required

Perform fruit pulp extraction and pre-cooking pulp activities

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

PC12. extract pulp of the fruits using various machinery

PC13. collect the refined pulp in the collection tank

PC14. check collected pulp to ensure if it is free from seeds and fiber

PC15. replace damaged or clogged filter screen of pulper cum finisher/pulper refiner machine

PC16. transfer measured quantity of pulp from collection tank to steam jacketed kettle/ pre-cooking tank for cooking pulp

PC17. check pumped quantity through the level indicator and glass windows of the pre-cooking tank

PC18. set control parameters of cooking tank, as required. Set Controls: Pressure, temperature, cooking time, stirrer speed, etc.

PC19. examine pre-cooked fruits pulp through feel/texture

PC20. measure the brix with the help of refractometer

PC21. collect the pre-cooked pulp in the collection tank/ holding tank

PC22. take samples of the pulp and transfer it to the quality lab for analysis as per organizational standards. Analysis: Brix, pH, titratable acidity, etc.

PC23. transfer measured quantity of pre-cooked pulp into de-aeration tank to the de-aerate pulp

PC24. transfer measured quantity of de-aerated pulp into continuous evaporator for concentrating the pulp

Carry out aseptic sterilization and packing of fruit pulp

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

PC25. transfer measured quantity of pre-cooked/de-aerated and concentrated pulp into sterilization tank to sterilize pulp before aseptic packing

PC26. perform sterilization of the pre-cooked/de-aerated and concentrated pulp as per organizational standards. Adjust controls of the sterilizer: Temperature, pressure, time, etc.

PC27. monitor and maintain steam pressure by adjusting gauges to sterilize fruit pulp as per SOP

PC28. maintain the temperature of the product surge tank until the marked filling level

PC29. place plastic liners in the container such as drums, cartons, etc.

PC30. check the labelling details on the packaging material and place inside the liner for filling pulp. Details: Date of manufacture, date of expiry, batch code etc.

PC31. fix the spout of the aseptic bag to the filling nozzle of the machine

PC32. fill hot sterile product into the aseptic bag. Set controls: Pressure, temperature, filling volume, etc. and automatically seal/close with sterile closures

PC33. check for the required weight of the container and label the container along with the details. Details: Batch number, date of manufacture, date of expiry, volume/weight, etc.

PC34. transfer filled aseptic bags into the storage area and store them by maintaining storage conditions as per SOP

Can fruit pulp

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

PC35. operate can reformer, flanger, seamer, can body beader, and embossing machines to form cans

PC36. use machine-lift to raise stacked cans and transfers them to mechanical conveyor

PC37. observe passing cans and remove defective/damaged cans from the conveyor and discard them as per SOP

PC38. feed empty cans to conveyors leading to the washing, filling, and sealing machines. Set controls: Temperature, pressure, conveyor speed of empty can machine, etc.

PC39. perform sterilization process of the cans and collect sterilized cans and transfer them to the filling machine

PC40. place sterilized cans on conveyor/manually in the filling line conveyor

PC41. transfer pre-cooked/pre-heated pulp into the filling tank. Set control: Temperature, volume, agitator etc.

PC42. transfer filled cans to the can sealing machine or manually place a lid over the filled cans

PC43. load the canned product manually in metal baskets

PC44. sterilize the can to a specified temperature for specified time

PC45. cool the cans in cold water tank by operating the valves to circulate cold water in tanks and manually dry the cans or by adjusting the controls of dryer

PC46. inspect the cans for leakage and remove the leaked cans from the water tank for further re-use/discard

PC47. transfer the filled and cooled cans to the packaging machine

PC48. take samples of the canned product and send them to the quality lab for analysis

PC49. pack the labeled cans into cartons and transfer to the storage area and store them as per standard storage conditions

PC50. inform department supervisor on discrepancies/concerns for immediate action

Perform post-production cleaning and maintenance of equipment's

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

PC51. clean work area, machineries, equipment, and tools using recommended cleaning agents and sanitizers

PC52. attend minor repairs/faults of all the machines, if any

PC53. ensure periodic (daily/weekly/monthly/quarterly/half-yearly/annual) maintenance of all machines and equipment as per standard

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. procedure to receive and check fruits from the supplier/vendor for quality and quantity

KU2. physical parameters such as appearance, colour, texture, maturity, etc. to check the quality of the fruit

KU3. methods to monitor the temperature of the fruits to be cooled to the required temperature

KU4. operating procedure of the ventilation system, ladder conveyor, chopper/cutter/slicer machine, aseptic packaging machineries, and canning machineries

KU5. SOP to wash fruits, cut fruits manually, dispose of the waste, replace damaged or clogged filter screen of pulper cum finisher/pulper refiner machine, transfer quality lab analysis of the products, send filled aseptic bags to the storage area, storing raw materials, packaging materials and finished goods

KU6. visual inspection procedure for manually washed fruits

KU7. peel/core removal process of the fruits

KU8. basics and concept of fruit pulp extraction process

KU9. process to collect refined fruit pulp into collection tank

KU10. methods to examine pre-cooked fruits pulp

KU11. aseptic packaging process and parameters

KU12. procedure to monitor and maintain steam pressure
KU13. canning process and parameters
KU14. how to fill pulp into the cans
KU15. types and category of packaging materials, and packaging machineries
KU16. post-production cleaning and maintenance procedures of the production equipment
KU17. quality parameters, basic food microbiology, and quality assessment based on physical parameters
KU18. sanitizers and disinfectants and its handling and storing procedure
KU19. organizational and FSSAI laws and regulations on product, packaging, and labelling

Generic Skills (GS)

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

GS1. note down the information communicated by the senior/supervisor, raw materials used for production and the finished products produced, readings of the process parameters and provide necessary information to fill the process chart, and down observations (if any) related to the process
GS2. read and interpret equipment manuals and process documents to understand the equipment's operation and process requirement, and internal information documents sent by internal teams, etc.
GS3. write information documents to internal departments/ internal teams
GS4. plan, prioritize, and sequence work operations
GS5. communicate effectively with the team members, senior/supervisor, and other departments
GS6. discuss task lists, schedules, and activities with the senior/supervisor
GS7. analyse critical points in day-to-day tasks through experience and observation and identify control measures to solve the issue

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Wash and sort the fruits	**8**	**12**	**-**	**-**
PC1. dump fruits into the washing tank to remove dirt, soil, dust and unwanted sticky material, etc.	2	3	-	-
PC2. transfer fruits from the washing tank to the washing line conveyor using ladder conveyor	2	3	-	-
PC3. rinse fruits with a high-pressure spraying system	2	3	-	-
PC4. inspect and sort fruits visually and manually to remove damaged, blemished, and rotten fruits	2	3	-	-
Peel/De-seed/Destone the fruits	**10**	**10**	**-**	**-**
PC5. put sorted fruits in the peeler or corer (depending on the type of fruits)	1	1	-	-
PC6. remove the peel or core of the fruits	1	1	-	-
PC7. wash peeled fruits with pump water or open spraying system	1	1	-	-
PC8. observe the fruits emerging from the peeling/coring process and ensure removal of peel/core	2	1	-	-
PC9. dispose of or further process the peeled material/core separately as per organization standards, as appropriate	1	2	-	-
PC10. cut fruits manually in required size or load the fruits in the chopper/cutter/slicer machine	2	2	-	-
PC11. cut the fruit tip or peel manually, if required	2	2	-	-
Perform fruit pulp extraction and pre-cooking pulp activities	**26**	**17**	**-**	**-**
PC12. extract pulp of the fruits using various machinery	2	2	-	-
PC13. collect the refined pulp in the collection tank	2	2	-	-
PC14. check collected pulp to ensure if it is free from seeds and fiber	2	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. replace damaged or clogged filter screen of pulper cum finisher/pulper refiner machine	2	1	-	-
PC16. transfer measured quantity of pulp from collection tank to steam jacketed kettle/ pre-cooking tank for cooking pulp	2	1	-	-
PC17. check pumped quantity through the level indicator and glass windows of the pre-cooking tank	2	1	-	-
PC18. set control parameters of cooking tank, as required. Set Controls: Pressure, temperature, cooking time, stirrer speed, etc.	2	1	-	-
PC19. examine pre-cooked fruits pulp through feel/texture	2	1	-	-
PC20. measure the brix with the help of refractometer	2	1	-	-
PC21. collect the pre-cooked pulp in the collection tank/ holding tank	2	2	-	-
PC22. take samples of the pulp and transfer it to the quality lab for analysis as per organizational standards. Analysis: Brix, pH, titratable acidity, etc.	2	2	-	-
PC23. transfer measured quantity of pre-cooked pulp into de-aeration tank to the de-aerate pulp	2	1	-	-
PC24. transfer measured quantity of de-aerated pulp into continuous evaporator for concentrating the pulp	2	1	-	-
Carry out aseptic sterilization and packing of fruit pulp	**14**	**20**	**-**	**-**
PC25. transfer measured quantity of pre-cooked/de-aerated and concentrated pulp into sterilization tank to sterilize pulp before aseptic packing	1	2	-	-
PC26. perform sterilization of the pre-cooked/de-aerated and concentrated pulp as per organizational standards. Adjust controls of the sterilizer: Temperature, pressure, time, etc.	2	2	-	-
PC27. monitor and maintain steam pressure by adjusting gauges to sterilize fruit pulp as per SOP	2	2	-	-
PC28. maintain the temperature of the product surge tank until the marked filling level	2	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC29. place plastic liners in the container such as drums, cartons, etc.	2	2	-	-
PC30. check the labelling details on the packaging material and place inside the liner for filling pulp. Details: Date of manufacture, date of expiry, batch code etc.	1	2	-	-
PC31. fix the spout of the aseptic bag to the filling nozzle of the machine	1	2	-	-
PC32. fill hot sterile product into the aseptic bag. Set controls: Pressure, temperature, filling volume, etc. and automatically seal/close with sterile closures	1	2	-	-
PC33. check for the required weight of the container and label the container along with the details. Details: Batch number, date of manufacture, date of expiry, volume/weight, etc.	1	2	-	-
PC34. transfer filled aseptic bags into the storage area and store them by maintaining storage conditions as per SOP	1	2	-	-
Can fruit pulp	**28**	**32**	**-**	**-**
PC35. operate can reformer, flanger, seamer, can body beader, and embossing machines to form cans	1	2	-	-
PC36. use machine-lift to raise stacked cans and transfers them to mechanical conveyor	2	2	-	-
PC37. observe passing cans and remove defective/damaged cans from the conveyor and discard them as per SOP	2	2	-	-
PC38. feed empty cans to conveyors leading to the washing, filling, and sealing machines. Set controls: Temperature, pressure, conveyor speed of empty can machine, etc.	2	2	-	-
PC39. perform sterilization process of the cans and collect sterilized cans and transfer them to the filling machine	2	2	-	-
PC40. place sterilized cans on conveyor/manually in the filling line conveyor	2	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC41. transfer pre-cooked/pre-heated pulp into the filling tank. Set control: Temperature, volume, agitator etc.	1	2	-	-
PC42. transfer filled cans to the can sealing machine or manually place a lid over the filled cans	2	2	-	-
PC43. load the canned product manually in metal baskets	2	2	-	-
PC44. sterilize the can to a specified temperature for specified time	2	2	-	-
PC45. cool the cans in cold water tank by operating the valves to circulate cold water in tanks and manually dry the cans or by adjusting the controls of dryer	1	2	-	-
PC46. inspect the cans for leakage and remove the leaked cans from the water tank for further re-use/discard	2	2	-	-
PC47. transfer the filled and cooled cans to the packaging machine	2	2	-	-
PC48. take samples of the canned product and send them to the quality lab for analysis	2	2	-	-
PC49. pack the labeled cans into cartons and transfer to the storage area and store them as per standard storage conditions	2	2	-	-
PC50. inform department supervisor on discrepancies/concerns for immediate action	1	2	-	-
Perform post-production cleaning and maintenance of equipment's	**4**	**4**	**-**	**-**
PC51. clean work area, machineries, equipment, and tools using recommended cleaning agents and sanitizers	2	1	-	-
PC52. attend minor repairs/faults of all the machines, if any	1	2	-	-
PC53. ensure periodic (daily/weekly/monthly/quarterly/half-yearly/annual) maintenance of all machines and equipment as per standard	1	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	90	95	-	-

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N0122
NOS Name	Produce fruit pulp from various fruits
Sector	Food Processing
Sub-Sector	Fruits and Vegetables
Occupation	Processing-Fruits and Vegetables
NSQF Level	3
Credits	TBD
Version	2.0
Last Reviewed Date	23/06/2023
Next Review Date	23/06/2026
NSQC Clearance Date	23/06/2023

FIC/N0203: Carry out preservation of fruits and vegetables

Description

This unit is about drying/dehydration, canning and freezing of fruits and vegetables through various methods using machineries as per the specifications and standards of the organization.

Scope

The scope covers the following :

- Dry/dehydrate the fruits and vegetable
- Can the fruits and vegetables
- Freeze the fruits and vegetable

Elements and Performance Criteria

Dry/dehydrate ,the fruits and vegetable

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

PC1. receive produce from the supplier/vendor

PC2. weigh and verify the quality through physical parameters such as appearance, colour, texture, maturity, etc.

PC3. transfer produce manually into the washing tank or start elevator conveyor to transfer

PC4. operate agitator and remove dirt, soil, etc., start ladder conveyor to transfer produce to washing line conveyor

PC5. spray high pressure chlorinated water and rinse with fresh water

PC6. operate sorting/inspecting line conveyor to transfer produce to inspection station

PC7. inspect visually and remove damaged, blemished and rotten fruits and discard them

PC8. operate conveyor or elevator and transfer sorted produce into peeler or corer machine and prepare lye solution for lye peeling (depending on the type of produce)

PC9. heat the lye solution in tank, observe dials and adjust controls to regulate pressure and temperature

PC10. carryout lye peeling by immersing the produce into lye peeling machine to remove the skin/membrane and drain out the excess lye solution

PC11. carryout steam peeling of produce and wash the peeled/scalded produce

PC12. operate conveyor to transfer the produce to chopper/cutter/slicer machine to slice to specified size and shape following SOP

PC13. operate conveyor to feed produce in the blanching machine

PC14. inspect the blanched produce visually for feel, colour, texture etc. to determine quality

PC15. pump measured quantity of water into sulphurising tank, measure chemicals mix manually or start stirrer for uniform mixing to prepare sulphur solution

PC16. load produce (only that require sulphurising) in trays for sulphur treatment

PC17. lift basket (or) start conveyor to remove sulphur from treated produce after specified time

PC18. transfer loaded trays to the drying area/yard, arrange in rows in drying area for exposure to direct sunlight, allow the produce to completely dry (drying time depends on intensity of sunlight and the type of produce)

PC19. check the dried produce to ensure complete removal of moisture

PC20. transfer dried product into scraping line or to vibrating mesh conveyor to remove any undesirable particles

PC21. transfer dried produce to finished product inspection line for hot air drying and set temperature and time for various types of produce following SOP

PC22. set control parameters of tunnel drier (in control panel of drier or in plc) Parameters: drier temperature, drying time, fan speed, air temperature, rate of air flow etc

PC23. • check the dried product passing out of tunnel drier through physical parameters
• Parameters: colour, appearance, dryness (through feel), firmness etc

PC24. transfer produce to the cooling area, start fans and cooling equipment and cool the dried produce

Can the fruits and vegetables

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

PC25. receive the raw material (fruits/vegetables) for canning

PC26. wash the raw material with water to remove dust, dirt and adhering surface microflora

PC27. perform sorting and grading to ensure the removal of inferior or damaged portion

PC28. perform peeling, coring and pitting: These are the primary unit operations for preparing produce for canning

PC29. perform cutting/splitting/ slicing either manually or mechanically

PC30. blanch the produce with boiling water or steam for short periods followed by immediate cooling prior to canning is called blanching

PC31. for fruits which cannot be blanched due to their delicate tissue structure treated with some chemicals to prevent oxidative browning, occurring due to exposure to oxygen during peeling and slicing

PC32. perform filling of material in cans (Tin cans are sterilized in hot water or in steam jet to remove any adhering dust or foreign matter)

PC33. perform syruping (cans are filled with hot sugar syrup (35-55%) for fruits) or brining (cans are filled with hot brine (2-10%) concentration for vegetables

PC34. Perform exhausting by removing air from the contents in the can before sealing

PC35. seaming/closing: Immediately after exhausting, the cans are sealed by using a double seamer

PC36. perform coding/Embossing of lid to identify the can once closed

PC37. perform heat processing to achieve sterilization of contents

PC38. perform cooling of the sealed cans to approximately 35-40oC to stop the cooking process and to prevent stack burning

PC39. stack the cans to allow the outer surface to dry (below 300C)

Freeze the fruits and vegetable

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

PC40. perform the treatment given prior to freezing (blanching, SO2, ascorbic acid)

PC41. wash and sort fruit

PC42. discard poor-quality pieces

PC43. treat washed and sorted fruit with ascorbic acid (available at drugstores, 1 teaspoon = 3 grams) or some other treatment to prevent discoloration, particularly with apples, peaches and nectarines

PC44. add crystalline ascorbic acid to chilled syrup just before using, or follow manufacturer's directions if using other anti-darkening products.

PC45. pack with sugar or syrup, or leave unsweetened (dry)

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. organization standards, process standards and procedures followed in the organization

KU2. types of products produced by the organisation

KU3. code of business conduct

KU4. dress code to be followed

KU5. job responsibilities/duties and standard operating procedures

KU6. internal processes like procurement, store management, inventory management, quality management and key contact points for query resolution

KU7. provision of wages, working hours and accident compensation as per organisation policy

KU8. food safety and hygiene standards followed

KU9. types of fruits and vegetables canned

KU10. types of machineries used in canning process and machineries used in the organisation

KU11. handling and maintenance of canning equipment

KU12. supplier/manufacturer instructions related to machineries

KU13. process for canning each type of fruits and vegetables

KU14. basic mathematics

KU15. calculation of raw material for required quantity of finished product

KU16. quality parameters, basic food microbiology and quality assessment based on physical parameters

KU17. The principles of food safety and hygiene, GMP and HACCP

Generic Skills (GS)

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

GS1. note the information communicated by the supervisor

GS2. note the raw materials used for production and the finished products produced

GS3. note the readings of the process parameters and provide necessary information to fill the process chart

GS4. note down observations (if any) related to the process

GS5. write information documents to internal departments/ internal teams

GS6. note down the data for ERP or as required by the organization

GS7. read and interpret the process required for producing various types of products

GS8. read and interpret and process flowchart for all products produced

GS9. read equipment manuals and process documents to understand the equipment operation and process requirement

GS10. read internal information documents sent by internal teams

GS11. discuss task lists, schedules and activities with the supervisor

GS12. effectively communicate with the team members

GS13. question the supervisor in order to understand the nature of the problem and to clarify queries

GS14. attentively listen and comprehend the information given by the speaker

GS15. communicate clearly with the supervisor and cross-department team on the issues faced

GS16. analyse critical points in day-to-day tasks through experience and observation and identify control measures to solve the issue

GS17. handle issues in case the supervisor is not available (as per the authority matrix defined by the organization)

GS18. plan and organize the work order and jobs received from the supervisor

GS19. organize raw materials and packaging materials required for all products following the instruction provided by the supervisor

GS20. plan and prioritize the work based on the instructions received from the supervisor

GS21. plan to utilise time and equipment effectively

GS22. organize all process/ equipment manuals so as to access information easily

GS23. support the supervisor in scheduling tasks for helper(s) customer centricity

GS24. understand customer requirements and their priority and respond as per their needs

GS25. support supervisor in solving problems by detailing out problems

GS26. discuss the possible solutions with the supervisor for problem-solving

GS27. apply domain information about maintenance processes and technical knowledge about tools and equipment

GS28. use common sense and make judgments on a day-to-day basis

GS29. use reasoning skills to identify and resolve basic problems

GS30. use intuition to detect any potential problems which could arise during operations

GS31. use acquired knowledge of the process for identifying and handling issues

GS32. analyse critical points in day-to-day tasks through experience and observation and identify control measures to solve the issue

GS33. plan to utilize time and equipment effectively

GS34. support the supervisor in scheduling tasks for helper(s)

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Dry/dehydrate ,the fruits and vegetable	**15**	**30**	**-**	**-**
PC1. receive produce from the supplier/vendor	-	-	-	-
PC2. weigh and verify the quality through physical parameters such as appearance, colour, texture, maturity, etc.	-	-	-	-
PC3. transfer produce manually into the washing tank or start elevator conveyor to transfer	-	-	-	-
PC4. operate agitator and remove dirt, soil, etc., start ladder conveyor to transfer produce to washing line conveyor	-	-	-	-
PC5. spray high pressure chlorinated water and rinse with fresh water	-	-	-	-
PC6. operate sorting/inspecting line conveyor to transfer produce to inspection station	-	-	-	-
PC7. inspect visually and remove damaged, blemished and rotten fruits and discard them	-	-	-	-
PC8. operate conveyor or elevator and transfer sorted produce into peeler or corer machine and prepare lye solution for lye peeling (depending on the type of produce)	-	-	-	-
PC9. heat the lye solution in tank, observe dials and adjust controls to regulate pressure and temperature	-	-	-	-
PC10. carryout lye peeling by immersing the produce into lye peeling machine to remove the skin/membrane and drain out the excess lye solution	-	-	-	-
PC11. carryout steam peeling of produce and wash the peeled/scalded produce	-	-	-	-
PC12. operate conveyor to transfer the produce to chopper/cutter/slicer machine to slice to specified size and shape following SOP	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. operate conveyor to feed produce in the blanching machine	-	-	-	-
PC14. inspect the blanched produce visually for feel, colour, texture etc. to determine quality	-	-	-	-
PC15. pump measured quantity of water into sulphurising tank, measure chemicals mix manually or start stirrer for uniform mixing to prepare sulphur solution	-	-	-	-
PC16. load produce (only that require sulphurising) in trays for sulphur treatment	-	-	-	-
PC17. lift basket (or) start conveyor to remove sulphur from treated produce after specified time	-	-	-	-
PC18. transfer loaded trays to the drying area/yard, arrange in rows in drying area for exposure to direct sunlight, allow the produce to completely dry (drying time depends on intensity of sunlight and the type of produce)	-	-	-	-
PC19. check the dried produce to ensure complete removal of moisture	-	-	-	-
PC20. transfer dried product into scraping line or to vibrating mesh conveyor to remove any undesirable particles	-	-	-	-
PC21. transfer dried produce to finished product inspection line for hot air drying and set temperature and time for various types of produce following SOP	-	-	-	-
PC22. set control parameters of tunnel drier (in control panel of drier or in plc) Parameters: drier temperature, drying time, fan speed, air temperature, rate of air flow etc	-	-	-	-
PC23. • check the dried product passing out of tunnel drier through physical parameters • Parameters: colour, appearance, dryness (through feel), firmness etc	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. transfer produce to the cooling area, start fans and cooling equipment and cool the dried produce	-	-	-	-
Can the fruits and vegetables	**9**	**25**	**-**	**-**
PC25. receive the raw material (fruits/vegetables) for canning	-	-	-	-
PC26. wash the raw material with water to remove dust, dirt and adhering surface microflora	-	-	-	-
PC27. perform sorting and grading to ensure the removal of inferior or damaged portion	-	-	-	-
PC28. perform peeling, coring and pitting: These are the primary unit operations for preparing produce for canning	-	-	-	-
PC29. perform cutting/splitting/ slicing either manually or mechanically	-	-	-	-
PC30. blanch the produce with boiling water or steam for short periods followed by immediate cooling prior to canning is called blanching	-	-	-	-
PC31. for fruits which cannot be blanched due to their delicate tissue structure treated with some chemicals to prevent oxidative browning, occurring due to exposure to oxygen during peeling and slicing	-	-	-	-
PC32. perform filling of material in cans (Tin cans are sterilized in hot water or in steam jet to remove any adhering dust or foreign matter)	-	-	-	-
PC33. perform syruping (cans are filled with hot sugar syrup (35-55%) for fruits) or brining (cans are filled with hot brine (2-10%) concentration for vegetables	-	-	-	-
PC34. Perform exhausting by removing air from the contents in the can before sealing	-	-	-	-
PC35. seaming/closing: Immediately after exhausting, the cans are sealed by using a double seamer	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC36. perform coding/Embossing of lid to identify the can once closed	-	-	-	-
PC37. perform heat processing to achieve sterilization of contents	-	-	-	-
PC38. perform cooling of the sealed cans to approximately 35-40oC to stop the cooking process and to prevent stack burning	-	-	-	-
PC39. stack the cans to allow the outer surface to dry (below 300C)	-	-	-	-
Freeze the fruits and vegetable	**6**	**15**	**-**	**-**
PC40. perform the treatment given prior to freezing (blanching, SO2, ascorbic acid)	-	-	-	-
PC41. wash and sort fruit	-	-	-	-
PC42. discard poor-quality pieces	-	-	-	-
PC43. treat washed and sorted fruit with ascorbic acid (available at drugstores, 1 teaspoon = 3 grams) or some other treatment to prevent discoloration, particularly with apples, peaches and nectarines	-	-	-	-
PC44. add crystalline ascorbic acid to chilled syrup just before using, or follow manufacturer's directions if using other anti-darkening products.	-	-	-	-
PC45. pack with sugar or syrup, or leave unsweetened (dry)	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N0203
NOS Name	Carry out preservation of fruits and vegetables
Sector	Food Processing
Sub-Sector	Fruits and Vegetables
Occupation	Processing-Fruits and Vegetables
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	23/06/2023
Next Review Date	23/06/2026
NSQC Clearance Date	23/06/2023

FIC/N0204: Carry out production of various types of pickles and pastes

Description

This unit is about preparing different types of pickles and pastes from fruits and vegetables as per the specifications and standard work practices.

Scope

The scope covers the following :

- Wash and sort the vegetables
- Peel and slice vegetables
- Prepare brine solution(preserves) and cure vegetables
- Prepare pastes
- Prepare Murabba
- Packaging and Post Production Activities

Elements and Performance Criteria

Wash and sort the vegetables

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

PC1. use appropriate sampling procedure to test the water quality, before start of operation

PC2. determine the water level in the tank for washing the fruits and vegetables

PC3. adjust the pressure of the spraying system adequately for rinsing the fruits and vegetables

PC4. monitor and adjust the air temperature and fan speed of the drying line conveyor for drying the rinsed vegetables to remove moisture content and transfer the materials to sorting line

PC5. inspect and discard damaged fruits and vegetables

PC6. • adjust speed of sorting line conveyor to arrange them on the basis of their grade
• grade: size, shape, colour, appearance etc

PC7. transfer the sorted vegetables to the peeling machine for peeling and slicing

Peel and slice vegetables

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

PC8. de-skin the vegetables/fruits using peeling machine, lye solution etc. as per the standard work practices

PC9. operate controls of the spraying system for washing the peeled fruits and vegetables

PC10. adjust controls of the slicing machine for cutting the vegetables to required size

PC11. collect sliced vegetables from the discharge chute and transfer them to the inspection line conveyor

PC12. inspect the sliced vegetables for any spoilage thoroughly

Prepare brine solution(preserves) and cure vegetables

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

PC13. assemble the ingredients required for pickle making such as vinegar, salt, sugar, etc.

PC14. fill the steam jacketed kettle with water adequately for steaming the vegetables/fruits

PC15. prepare the brine solution for softening the vegetables

PC16. use salinometer to check the salt concentration of the brine solution

PC17. transfer the brine solution from mixing tank to storage tanks while ensuring no spillage takes place

PC18. place the cut vegetables in brine solution for fermentation

PC19. stir the vegetables periodically for salt equilibrium and check the acidity to confirm that fermentation process is complete

Prepare pastes

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

PC20. crush the cured vegetables with a mill/crusher and make a coarse paste with a pulper

PC21. transfer the coarse paste from pulper to grinding machine to make a fine paste

PC22. add preservatives, salts, etc. as per type of paste to be produced

PC23. transfer the fermented vegetables to the pickle mixing machine appropriately

PC24. prepare spice mix as per formulation; add measured quantity and oil to the vegetables

PC25. mix all the ingredients, stir well and check for the consistency

PC26. transfer pickle into designated container (for pickle in oil) once it is mixed well

PC27. control speed of the conveyor to load the pickle mixture into the hopper of the filling machine

PC28. position the measured containers right under the filling nozzle

PC29. inspect the finished product to confirm whether it meets the quality standards of the organisation

Prepare Murabba

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

PC30. add water in the batch mixing cooker, and put the cut fruits or vegetables and bring it to a boil till the ingredients become tender and transparent

PC31. prepare the sugar syrup based on the type of murabba to be produced

PC32. use refractometer to measure the degree brix (sugar content) of the syrup

PC33. add boiled fruits/vegetables to the sugar syrup and heat them until they are evenly mixed

PC34. cool the mixture prepared and transfer it to the storage tank for packaging

Packaging and Post Production Activities

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

PC35. load appropriate labels in the packaging machine and accurate information for packing the finished product while following food laws and regulations

PC36. monitor the packaging process (such as pickle filling, sealing, labelling, etc.) and carry out adjustments as required

PC37. handover a sample of the finished product to concerned personnel for quality analysis as per production requirements Analysis – physical, chemical, biological, sensory, shelf life etc.

PC38. pack the finished product into cartons and move them to storage area manually or mechanically, following standard work practices

PC39. report discrepancies/concerns to supervisor promptly for immediate action

PC40. attend minor repairs/faults of all machines (if any)

PC41. clean work area, machineries, equipment and tools using industry approved cleaning procedures (such as Clean in Place, Cleaning out of Place), cleaning agents and sanitizers

PC42. follow organizational procedure for disposal of waste

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. organisational standards and procedures pertaining to production, quality analysis, maintenance, reporting, documentation, etc.

KU2. quality of water required for washing of fruits and vegetable

KU3. importance of water testing before start of operations

KU4. how to ensure adequate pressure of spraying system for rinsing of fruits and vegetables without damaging the outer layer

KU5. standard methods used for drying in fruits and vegetable after washing

KU6. how to move the fruits and vegetables from one place to another safely

KU7. how to carry out processes such as peeling and slicing without damaging the fruits and vegetables

KU8. sorting and grading the fruits and vegetables on the basis of their size, shape, colour, appearance, etc.

KU9. intrinsic and extrinsic factors affecting the spoilage of fruits and vegetables

KU10. inspection techniques to detect spoilages, damaged fruits and vegetables and procedure followed to discard them appropriately

KU11. how to operate the machinery used for pickle and paste making such as washing tank, drying line conveyor, peeling machine, de-skinner, crusher, pulper, grinding machines, jacketed and non-jacketed kettles, extruder, etc.

KU12. use of different ingredients for pickle and paste making

KU13. procedure to prepare the brine solution and tasks to be performed for the preservation of pickles, pastes and murabba

KU14. use of salinometer in the process

KU15. importance and use of the salt, brine and oil solution for pickle making

KU16. time taken and precautions to be followed for the completion of fermentation process

KU17. how to inspect the coarseness and consistency of the paste

KU18. types of containers/packaging material used for packing the pickles and pastes

KU19. procedure to be followed in murabba making (type of preservative to be used, sugar required, degree of brix in sugar solution, temperature required for heating and cooling the murabba, etc.)

KU20. how to ensure desired consistency of the sugar syrup in murabba making

KU21. procedure to be followed for storing the raw materials and packaging materials used in pickle, paste and murabba making

KU22. food laws and regulations applicable to product packaging and labelling and the information to be printed on the packet labels

KU23. different types of packaging material to be used for packaging of pickle, paste and murabba

KU24. how to operate the different packaging machines and pattern followed for different stock keeping units for pickle, paste and murabba

KU25. sampling procedures to be followed for the finished products

KU26. standard work practices used to repair minor faults in pickle, paste and murabba making machines and equipment

KU27. how to use chemical cleaners, sanitizers, disinfectants and storing them safely

KU28. organizational procedure for disposal of waste material from the processing area in an environmentally safe manner

KU29. workplace safety requirements, and hazard handling procedures

KU30. fundamentals of Good Manufacturing Practices to be followed in the food processing industry

KU31. basic principles of HACCP to be implemented in the process

KU32. importance of ensuring a tidy workplace

Generic Skills (GS)

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

GS1. read and interpret organizational policies, Standard Operating Procedure, Process manuals, etc.

GS2. communicate with others effectively

GS3. plan and prioritize tasks to maximize productivity

GS4. basic arithmetic operations

GS5. be punctual and courteous

GS6. read equipment manuals and process documents to understand the equipment operation and process requirement

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Wash and sort the vegetables	**5**	**8**	**-**	**-**
PC1. use appropriate sampling procedure to test the water quality, before start of operation	-	-	-	-
PC2. determine the water level in the tank for washing the fruits and vegetables	-	-	-	-
PC3. adjust the pressure of the spraying system adequately for rinsing the fruits and vegetables	-	-	-	-
PC4. monitor and adjust the air temperature and fan speed of the drying line conveyor for drying the rinsed vegetables to remove moisture content and transfer the materials to sorting line	-	-	-	-
PC5. inspect and discard damaged fruits and vegetables	-	-	-	-
PC6. • adjust speed of sorting line conveyor to arrange them on the basis of their grade • grade: size, shape, colour, appearance etc	-	-	-	-
PC7. transfer the sorted vegetables to the peeling machine for peeling and slicing	-	-	-	-
Peel and slice vegetables	**5.5**	**8**	**-**	**-**
PC8. de-skin the vegetables/fruits using peeling machine, lye solution etc. as per the standard work practices	-	-	-	-
PC9. operate controls of the spraying system for washing the peeled fruits and vegetables	-	-	-	-
PC10. adjust controls of the slicing machine for cutting the vegetables to required size	-	-	-	-
PC11. collect sliced vegetables from the discharge chute and transfer them to the inspection line conveyor	-	-	-	-
PC12. inspect the sliced vegetables for any spoilage thoroughly	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare brine solution(preserves) and cure vegetables	**5**	**14**	**-**	**-**
PC13. assemble the ingredients required for pickle making such as vinegar, salt, sugar, etc.	-	-	-	-
PC14. fill the steam jacketed kettle with water adequately for steaming the vegetables/fruits	-	-	-	-
PC15. prepare the brine solution for softening the vegetables	-	-	-	-
PC16. use salinometer to check the salt concentration of the brine solution	-	-	-	-
PC17. transfer the brine solution from mixing tank to storage tanks while ensuring no spillage takes place	-	-	-	-
PC18. place the cut vegetables in brine solution for fermentation	-	-	-	-
PC19. stir the vegetables periodically for salt equilibrium and check the acidity to confirm that fermentation process is complete	-	-	-	-
Prepare pastes	**5**	**18**	**-**	**-**
PC20. crush the cured vegetables with a mill/crusher and make a coarse paste with a pulper	-	-	-	-
PC21. transfer the coarse paste from pulper to grinding machine to make a fine paste	-	-	-	-
PC22. add preservatives, salts, etc. as per type of paste to be produced	-	-	-	-
PC23. transfer the fermented vegetables to the pickle mixing machine appropriately	-	-	-	-
PC24. prepare spice mix as per formulation; add measured quantity and oil to the vegetables	-	-	-	-
PC25. mix all the ingredients, stir well and check for the consistency	-	-	-	-
PC26. transfer pickle into designated container (for pickle in oil) once it is mixed well	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC27. control speed of the conveyor to load the pickle mixture into the hopper of the filling machine	-	-	-	-
PC28. position the measured containers right under the filling nozzle	-	-	-	-
PC29. inspect the finished product to confirm whether it meets the quality standards of the organisation	-	-	-	-
Prepare Murabba	**5**	**10**	**-**	**-**
PC30. add water in the batch mixing cooker, and put the cut fruits or vegetables and bring it to a boil till the ingredients become tender and transparent	-	-	-	-
PC31. prepare the sugar syrup based on the type of murabba to be produced	-	-	-	-
PC32. use refractometer to measure the degree brix (sugar content) of the syrup	-	-	-	-
PC33. add boiled fruits/vegetables to the sugar syrup and heat them until they are evenly mixed	-	-	-	-
PC34. cool the mixture prepared and transfer it to the storage tank for packaging	-	-	-	-
Packaging and Post Production Activities	**4.5**	**12**	**-**	**-**
PC35. load appropriate labels in the packaging machine and accurate information for packing the finished product while following food laws and regulations	-	-	-	-
PC36. monitor the packaging process (such as pickle filling, sealing, labelling, etc.) and carry out adjustments as required	-	-	-	-
PC37. handover a sample of the finished product to concerned personnel for quality analysis as per production requirements Analysis – physical, chemical, biological, sensory, shelf life etc.	-	-	-	-
PC38. pack the finished product into cartons and move them to storage area manually or mechanically, following standard work practices	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC39. report discrepancies/concerns to supervisor promptly for immediate action	-	-	-	-
PC40. attend minor repairs/faults of all machines (if any)	-	-	-	-
PC41. clean work area, machineries, equipment and tools using industry approved cleaning procedures (such as Clean in Place, Cleaning out of Place), cleaning agents and sanitizers	-	-	-	-
PC42. follow organizational procedure for disposal of waste	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N0204
NOS Name	Carry out production of various types of pickles and pastes
Sector	Food Processing
Sub-Sector	Fruits and Vegetables
Occupation	Processing-Fruits and Vegetables
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	23/06/2023
Next Review Date	23/06/2026
NSQC Clearance Date	23/06/2023

FIC/N0129: Sort and grade produce

Description

This NOS unit is about sorting and grading of various agricultural produce manually and using various machineries.

Scope

The scope covers the following :

- Wash and dry the produce
- Sort and grade the produce
- Package produce
- Transport and storage

Elements and Performance Criteria

Wash and dry the produce

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

PC1. receive agricultural produce from internal warehouse/cold storage

PC2. • check the quality by evaluating the physical and sensory parameters
• Physical parameters: shape, size, weight, volume, surface area, density, porosity, appearance, colour, taste, smell, texture, maturity, specific gravity, foreign material contamination, pest infestation, etc.

PC3. set controls for float tank/water tank and pump the water level for washing produce

PC4. add specified quantity of chlorine in the water tank to kill parasites, bacteria, and viruses as per organization standards

PC5. set controls such as speed and height of conveyor to lift the agricultural produce from the covered floor, racks or containers

PC6. • dump the produce in the float tank/water tank for the removal of impurities
• Impurities: soil, pesticides, dirt, plant debris and rotting parts

PC7. adjust the pressure of the spraying system to for removal of chlorine from the surface of fruits and vegetables

PC8. • set controls for drying line conveyor and allow washed fruits and vegetables to pass through the drying tunnel
• Controls: temperature, air speed etc.

PC9. • set controls of the brushing conveyor to clean produce which is unsuitable for water treatment
• Controls: speed, brush type, rotation of brushes etc.

PC10. transfer the fruits and/or vegetables to the brushing conveyor to remove soil and dirt from the surface of the produce

PC11. • set controls of the dryer to dry the produce thoroughly
• controls: temperature, humidity, etc.

PC12. apply waxing treatment depending on the type of produce to reduce water loss and improve appearance

Sort and grade produce

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

PC13. move the produce to the sorting table to remove the severely damaged produce

PC14. place the mesh inside the mechanical sieving machine as per produce requirements to separate the unwanted material from the produce

PC15. remove dry foliage attached to the bulb of onion and garlic with illige or sickle and place the produce on measurement rings of known diameter to sort them on the basis of their size

PC16. calibrate the electronic colour sorter and mention the readings against each produce for sorting it based on their colour

PC17. operate the grading line conveyors with mesh screens/diverging belts/rollers/weight sensitive trays for grading based on diameter ,length, weight and size as per the requirement

PC18. • send the samples to quality lab for analysis of quality parameters as per the requirement
• Quality parameters: TSS, acidity, etc.

PC19. place baskets, tubs, or crates below discharge outlets of each lane or machine to collect the sorted and graded fruits and/or vegetables

PC20. report any malfunctions and discrepancies to the supervisor and implement the corrective action as suggested immediately

Package and transport produce

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

PC21. move the containers with sorted and graded produce to the packaging area safely

PC22. feed the produce into the hopper of automatic packing machine after sorting and grading

PC23. load the packaging materials in the machine and set control of packaging machine for packing the produce

PC24. • store and pack the produce after sorting and grading into appropriate materials
• Materials : cartons , gunny bags, wraps, net, mesh, plastic molded trays, thermoformed PVC trays etc.

PC25. • provide labelling information packaging label as per FSSAI guidelines and pass though the shrink wrap machine to wrap with shrinkable plastic films
• Labelling information: product name, brand, size, grade, variety, net weight, count, grown by, packed by, , batch code, date of packing, best before date or used by date, allergen declaration, storage conditions and country of origin etc.

PC26. perform secondary packaging as per the product requirement

PC27. place protective material such as paper, straw, etc. in carton, place packed trays in the carton and seal, strap carton if required and weigh the packed cartons

PC28. place cartons on the pallets safely to shrink wrap palletized cartons for bulk packaging

PC29. move the packed cartons/ pallets to storage area and store them as per standard organization practices

PC30. follow standard practices to dispatch the packed produce to final destination as per suitable transportation method

Storage and post production cleaning and regular maintenance of equipment

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

PC31. clean and disinfect the work area, machineries, equipment and tools using recommended cleaning agents

PC32. attend minor repairs/faults of all machines (if any)

PC33. ensure periodic maintenance of all machines and equipment following the organisational SOP and instructions as mentioned in manufacturer documents

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. organization standards, process standards and procedures followed in the job
KU2. internal processes like procurement, store management, inventory management, quality management and key contact points for query resolution
KU3. roles and responsibilities in the job
KU4. types of products produced by the organisation
KU5. types of raw materials (various fruits and vegetables), variety and quality of produce and their characteristics
KU6. washing process and various chemicals used for washing produce
KU7. types of machineries used and their safe handling practices
KU8. maintenance of machinery used in the process
KU9. types of rejects for each produce and methods to identify rejects
KU10. procedure followed to handle rejection materials
KU11. food standards to be followed for handling the agricultural produce
KU12. quality parameters, basic food microbiology and quality assessment based on physical parameters
KU13. physical and sensory characteristics of agricultural produce
KU14. different grades of agricultural produce
KU15. process of dilution and concentration of chlorine water
KU16. how to operate and control conveyor belt, brushing conveyor, grading line
KU17. optimum use of high-pressure spray system, dryer
KU18. how to carry out waxing of fruits and vegetables
KU19. parameters to be inspected during sorting and grading of agricultural produce
KU20. calibration of electronic colour sorter
KU21. randomized and systematic sampling of produce
KU22. importance of labelling the package with required details
KU23. different types of packaging material used for packing fresh produce
KU24. controls and operations of packaging machine
KU25. different types of packaging such as primary and secondary
KU26. how to organise pallets in storehouse and methods to organize pallets
KU27. food safety and hygiene standards to be followed in the work process
KU28. types and category of packaging materials, packaging machineries
KU29. storage procedures for incoming produce, packaging materials and packed produce
KU30. types of sanitizers and disinfectants and its handling and storing methods
KU31. cleaning practices (such as CIP and COP methods) and cleaning agents and disinfectants used in the process and their concentrations
KU32. basic calculations performed in the job
KU33. food laws and regulations on product, packaging and labelling

KU34. elements of Good Manufacturing Practices (GMP) and Good Hygiene Practices (GHP) to be followed

KU35. importance of ensuring a tidy workplace

Generic Skills (GS)

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

GS1. interpret and analyse the information communicated by the supervisor, process flowcharts, equipment manuals, etc.

GS2. record the readings of the process parameters and provide necessary information to fill the process chart

GS3. note down observations (if any) related to the process and estimate the yield

GS4. write information documents to internal departments/ internal teams

GS5. discuss task lists, schedules and activities with the supervisor

GS6. communicate with the team effectively and reciprocate understanding

GS7. plan and prioritise tasks effectively

GS8. use common sense and make judgments on day-to-day basis

GS9. use reasoning skills to identify and resolve basic problems

GS10. use acquired knowledge of the process for identifying and handling issues

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Wash and dry the produce	**15.5**	**20.5**	**-**	**-**
PC1. receive agricultural produce from internal warehouse/cold storage	1.5	1.5	-	-
PC2. • check the quality by evaluating the physical and sensory parameters • Physical parameters: shape, size, weight, volume, surface area, density, porosity, appearance, colour, taste, smell, texture, maturity, specific gravity, foreign material contamination, pest infestation, etc.	0.5	0.5	-	-
PC3. set controls for float tank/water tank and pump the water level for washing produce	0.5	0.5	-	-
PC4. add specified quantity of chlorine in the water tank to kill parasites, bacteria, and viruses as per organization standards	1	1	-	-
PC5. set controls such as speed and height of conveyor to lift the agricultural produce from the covered floor, racks or containers	0.5	0.5	-	-
PC6. • dump the produce in the float tank/water tank for the removal of impurities • Impurities: soil, pesticides, dirt, plant debris and rotting parts	1	2	-	-
PC7. adjust the pressure of the spraying system to for removal of chlorine from the surface of fruits and vegetables	3.5	5.5	-	-
PC8. • set controls for drying line conveyor and allow washed fruits and vegetables to pass through the drying tunnel • Controls: temperature, air speed etc.	2	3	-	-
PC9. • set controls of the brushing conveyor to clean produce which is unsuitable for water treatment • Controls: speed, brush type, rotation of brushes etc.	2	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. transfer the fruits and/or vegetables to the brushing conveyor to remove soil and dirt from the surface of the produce	1	2	-	-
PC11. • set controls of the dryer to dry the produce thoroughly • controls: temperature, humidity, etc.	1	1	-	-
PC12. apply waxing treatment depending on the type of produce to reduce water loss and improve appearance	1	1	-	-
Sort and grade produce	**9.5**	**20.5**	**-**	**-**
PC13. move the produce to the sorting table to remove the severely damaged produce	1	3	-	-
PC14. place the mesh inside the mechanical sieving machine as per produce requirements to separate the unwanted material from the produce	1	3	-	-
PC15. remove dry foliage attached to the bulb of onion and garlic with illige or sickle and place the produce on measurement rings of known diameter to sort them on the basis of their size	1	2	-	-
PC16. calibrate the electronic colour sorter and mention the readings against each produce for sorting it based on their colour	1	2	-	-
PC17. operate the grading line conveyors with mesh screens/diverging belts/rollers/weight sensitive trays for grading based on diameter ,length, weight and size as per the requirement	1.5	1.5	-	-
PC18. • send the samples to quality lab for analysis of quality parameters as per the requirement • Quality parameters: TSS, acidity, etc.	1	3	-	-
PC19. place baskets, tubs, or crates below discharge outlets of each lane or machine to collect the sorted and graded fruits and/or vegetables	1	3	-	-
PC20. report any malfunctions and discrepancies to the supervisor and implement the corrective action as suggested immediately	2	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Package and transport produce	**10.5**	**21.5**	**-**	**-**
PC21. move the containers with sorted and graded produce to the packaging area safely	0.5	0.5	-	-
PC22. feed the produce into the hopper of automatic packing machine after sorting and grading	1	3	-	-
PC23. load the packaging materials in the machine and set control of packaging machine for packing the produce	1	2	-	-
PC24. • store and pack the produce after sorting and grading into appropriate materials • Materials : cartons , gunny bags, wraps, net, mesh, plastic molded trays, thermoformed PVC trays etc.	1	2	-	-
PC25. • provide labelling information packaging label as per FSSAI guidelines and pass though the shrink wrap machine to wrap with shrinkable plastic films • Labelling information: product name, brand, size, grade, variety, net weight, count, grown by, packed by, , batch code, date of packing, best before date or used by date, allergen declaration, storage conditions and country of origin etc.	1	3	-	-
PC26. perform secondary packaging as per the product requirement	1	3	-	-
PC27. place protective material such as paper, straw, etc. in carton, place packed trays in the carton and seal, strap carton if required and weigh the packed cartons	1	3	-	-
PC28. place cartons on the pallets safely to shrink wrap palletized cartons for bulk packaging	1	1	-	-
PC29. move the packed cartons/ pallets to storage area and store them as per standard organization practices	1	2	-	-
PC30. follow standard practices to dispatch the packed produce to final destination as per suitable transportation method	2	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Storage and post production cleaning and regular maintenance of equipment	**3.5**	**6.5**	**-**	**-**
PC31. clean and disinfect the work area, machineries, equipment and tools using recommended cleaning agents	1	3	-	-
PC32. attend minor repairs/faults of all machines (if any)	1	3	-	-
PC33. ensure periodic maintenance of all machines and equipment following the organisational SOP and instructions as mentioned in manufacturer documents	1.5	0.5	-	-
NOS Total	**39**	**69**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N0129
NOS Name	Sort and grade produce
Sector	Food Processing
Sub-Sector	Fruits and Vegetables
Occupation	Sorting and Grading
NSQF Level	3
Credits	TBD
Version	2.0
Last Reviewed Date	23/06/2023
Next Review Date	23/06/2026
NSQC Clearance Date	23/06/2023

FIC/N0103: Produce Squash and Juice

Description

This unit is about producing squash and juice using various machineries as per specifications and standards of the organization

Elements and Performance Criteria

Receive, wash, sort and slice fruits

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

PC1. receive fruits from the supplier/vendor, check weight and quality through physical parameters such as appearance, colour, texture, maturity, etc

PC2. open valves or start pump to fill water into the washing tank and control water level, dump fruits manually or start elevator conveyor to transfer fruits into washing tank for washing or wash and rinse manually

PC3. switch on agitator of revolving screens/blades to immerse each fruit into water to remove dirt, soil and other impurities

PC4. start ladder conveyor and control speed to lift fruits from the washing tank and transfer to washing line conveyor

PC5. open valves of the high pressure spraying system for fresh water and adjust pressure to spray water on fruits for rinsing

PC6. start and adjust speed of sorting/inspecting line conveyor to transfer fruits to inspection station, inspect visually and remove damaged, blemished and rotten fruit; dispose waste following SOP

PC7. cut fruits manually or load the fruits in the chopper/cutter/slicer/grating or grinding machine, adjust controls to cut/grate fruits to required size, start machine and then collect sliced/grated fruits from the discharge chute

Extract fruit juice

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

PC8. start the conveyor and control speed to transfer fruits to juice extractors (in case of citrus fruits), crusher and fruit mills (for fruits such as apples, pear, etc.), or stem and seed remover (grapes and berries)

PC9. set controls such as speed/rotation of stem and seed remover machine, start machine and feed fruits such as grapes and berries though conveyor to remove stem and seed; dispose waste following SOP

PC10. set controls such as speed/rotation, feed rate, etc. of citrus fruit extractor or rotary press machine to extract juice from citrus juice (citrus fruit extractor), start machine and open valves to allow citrus fruits to pass though machine to extract juice; simultaneously remove peel and seeds, collect juice flowing though the discharge outlet in collection tank; dispose waste following SOP

PC11. set controls such as speed/rotation of fruit mills (fruit grinding mill/grater mill/ hammer mill) depending on the type of fruit, start machine and open valves to allow fruits such as apple, pear, etc. to pass through machine for grinding fruit into fine gratings

PC12. measure enzymes required for batch following formulation chart, pump cut/ grated fruit into reservoir tank and add measured quantity of enzymes (for selected fruits like apple), set timer for fruit-enzyme contact time following SOP and allow to stand for specified time for enzyme activity

PC13. adjust controls such as speed/rotation of pressing machines (hydraulic press/ cloth press/ continuous belt press / screw press, etc.), start machine and open valves to allow (enzyme treated) fruits such as apple, pear, etc. to pass through machine for extraction of juice and removal of peel, stem and seeds, collect juice in collection tank; dispose waste following SOP

PC14. open valve of start pump to transfer fruit juice to filter for removing small suspended particles (in case of apple, pear, etc.), collect filtered juice in collection tank

PC15. change sieves or clean sieves of juice extraction machines to avoid clogging; change or sharpen blades of fruit mills for better grinding

PC16. check the quality of extracted juice through physical parameters such as appearance, colour, consistency, flavour, taste, etc., sample and transfer to quality lab for analysis

Pasteurize Juice

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

PC17. set controls such as temperature, steam pressure, etc. of vacuum concentrate machine; start pump to allow fruit juice to pass thorough machine to concentrate fruit juice and recover aroma (aroma stripping

PC18. set process parameters such as pressure, temperature, flow rate, time, etc. of pasteurizer

PC19. open valves to allow steam to pass through pasteurizer, observe temperature and pressure gauge and adjust controls to achieve required pressure and temperature

PC20. open valves to allow juice to pass to the pasteurizer, monitor and maintain process parameters throughout the pasteurization process (pasteurize cloudy juice immediately after pressing)

PC21. open valves or start pump to circulate water through heat exchangers to cool pasteurized juice, open valves to allow pasteurised juice to pass through heat exchangers to cool to required temperature, collect in collection tank

Clarify Juice

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

PC22. measure enzymes required for clarification of juice following formulation chart, add to the pasteurized juice in the collection tank (for obtaining clear juice), start stirrer and control speed for uniform mixing of enzymes

PC23. open valves or start pump to allow enzyme treated juice to pass through ultra filtration unit to remove smallest particles and obtain clear juice

PC24. check quality of juice through physical parameters such as colour, appearance, flavour, taste, etc., sample and transfer to lab for quality analysis and to ensure conformance to standards

PC25. pump processed juice to the holding /reservoir tanks and store maintaining storage parameters until packaging or further processing (to prepare squash)

Prepare Squash

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

PC26. open valve to admit measured quantity of water into steam jacketed kettle/tank, observe gauge or designated mark for filled quantity

PC27. measure sugar (add acids if specified in the formulation) and add it to water in the kettle/tank to prepare sugar syrup, turn on mixer/agitator and control speed to mix ingredients

PC28. turn valves to admit steam into kettle/tank, set required pressure, temperature and time to heat the solution following sop, observe pressure and temperature gauge, adjust valves to maintain set parameters

PC29. check sugar syrup using refractometer instrument to conform its specifications to standards, open valves or start pump to allow sugar syrup to pass through filter to remove undesirable particles and sediments, collect filtered sugar syrup in storage or holding tanks

PC30. start pump to transfer measured quantity of (single or multiple fruit) juice concentrate or clarified juice (depending on type of product produced) , water, sugar syrup into blending tank; check pumped quantity through the level indicator and glass windows of the tank, add measured quantity of acids, preservatives, colour, flavor, etc. following sop, set controls of stirrer/agitator (mixing speed, mixing time, etc.) and start mixer, observe mixing process, collect sample and check physical parameters to ensure uniform mixing

PC31. adjust controls to set temperature, pressure, etc. of pasteurizer/heat exchanger; turn valves to admit steam, start pump to transfer blended product into pasteurizer/heat exchanger, check dials and adjust gauges to control process parameters, open valves to allow water to pass thorough heat exchanger to cool product, open valves to collect finished product in storage tank, to hold until packaging

PC32. check the quality of finished product through physical parameters (appearance, colour, consistency, flavour, taste etc.), sample and transfer to quality lab for analysis and to ensure conformance to quality standards

Fill, pack and store juice and squash

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

PC33. start pump to transfer finished product into the filling tank of packaging machine

PC34. load packing materials (tetra packs, glass bottles, plastic containers, etc.) in packaging machine, sealing materials (caps, lids, crowns, etc.) in sealing machine, labels in labelling machine; set machine for filling volume, set date coding machine for date code details (batch number, date of manufacture, date of expiry, etc.)

PC35. start automatic packaging machine to form packaging materials, wash bottle/plastic containers, fill measured quantity of finished products, close/seal and label, check the weight of packed product periodically to ensure its conformance to standards

PC36. set controls of straw attaching machine and start machine to attach straw in the packaging material (like tetra pack) of packed product

PC37. place packed and labelled products in cartons and transfer to storage area and store maintaining storage conditions following SOP

PC38. report discrepancies/concerns to department supervisor for immediate action

Carry out post production cleaning and regular maintenance of equipment

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

PC39. clean the work area, machineries, equipment and tools using approved cleaning agents and sanitizers

PC40. attend minor repairs/faults of all machines (if any)

PC41. ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment following the sop or following suppliers instructions/manuals

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. organization standards, process standards and procedures followed in the organisation
KU2. types of products produced by the organisation
KU3. code of business conduct
KU4. dress code to be followed
KU5. job responsibilities/duties and standard operating procedures
KU6. internal processes such as procurement, store management, inventory management, quality management and key contact points for query resolution
KU7. provision of wages, working hours as per organisation policy
KU8. food safety and hygiene standards followed
KU9. types and varieties of raw materials (fruits) and products produced from eachraw material
KU10. production process, process parameters and product formulation for production of various products produced
KU11. types of machineries used in processing and machineries used in the organisation
KU12. handling all processing machineries
KU13. maintenance of machineries, equipments and too
KU14. basic mathematics
KU15. aseptic packaging process and parameters, handling aseptic packaging machineries
KU16. procedure for disposal of waste from agricultural produce
KU17. quality parameters, basic food microbiology and quality assessment based on physical parameters
KU18. types and category of packaging materials, packaging machineries
KU19. storage procedures for raw materials, packaging materials and finished goods
KU20. cleaning procedures such as CIP and COP
KU21. knowledge of sanitizers and disinfectants and its handling and storing methods
KU22. food laws and regulations on product, packaging and labelling
KU23. food safety and hygiene
KU24. GMP
KU25. HACCP

Generic Skills (GS)

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

GS1. note the information communicated by the supervisor
GS2. note the raw materials used for production and the finished products produced
GS3. note the readings of the process parameters and provide necessary information to fill the process chart
GS4. note down observations (if any) related to the process

GS5. write information documents to internal departments/ internal teams
GS6. note down the data for online erp or as per applicability in the organization
GS7. read and interpret the process required for producing various types of products
GS8. read and interpret and process flowchart for all products produced
GS9. read equipment manuals and process documents to understand the equipments operation and process requirement
GS10. read internal information documents sent by internal teams
GS11. discuss task lists, schedules and activities with the supervisor
GS12. effectively communicate with the team members
GS13. question the supervisor in order to understand the nature of the problem and to clarify queries
GS14. attentively listen and comprehend the information given by the speaker
GS15. communicate clearly with the supervisor and cross department teams on the issues faced during process
GS16. analyse critical points in day to day tasks through experience and observation and identify control measures to solve the issue
GS17. handle issues in case the supervisor is not available (as per the authority matrix defined by the organization)
GS18. plan and organize the work order and jobs received from the supervisor
GS19. organize raw materials and packaging materials required for all products following the instruction provided by the supervisor
GS20. plan and prioritize the work based on the instructions received from the supervisor
GS21. plan to utilise time and equipment's effectively
GS22. organize all process/ equipment manuals so as to access information easily
GS23. support the supervisor in scheduling tasks for helper(s)
GS24. understand customer requirements and their priority and respond as per their needs
GS25. support supervisor in solving problems by detailing out problems
GS26. discuss the possible solutions with the supervisor for problem solving
GS27. apply domain information about maintenance processes and technical knowledge about tools and equipment
GS28. use common sense and make judgments on day to day basis
GS29. use reasoning skills to identify and resolve basic problems
GS30. use intuition to detect any potential problems which could arise during operations
GS31. use acquired knowledge of the process for identifying and handling issues

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Receive, wash, sort and slice fruits	**19**	**33**	**-**	**-**
PC1. receive fruits from the supplier/vendor, check weight and quality through physical parameters such as appearance, colour, texture, maturity, etc	4	6	-	-
PC2. open valves or start pump to fill water into the washing tank and control water level, dump fruits manually or start elevator conveyor to transfer fruits into washing tank for washing or wash and rinse manually	2	3	-	-
PC3. switch on agitator of revolving screens/blades to immerse each fruit into water to remove dirt, soil and other impurities	5	10	-	-
PC4. start ladder conveyor and control speed to lift fruits from the washing tank and transfer to washing line conveyor	2	3	-	-
PC5. open valves of the high pressure spraying system for fresh water and adjust pressure to spray water on fruits for rinsing	2	3	-	-
PC6. start and adjust speed of sorting/inspecting line conveyor to transfer fruits to inspection station, inspect visually and remove damaged, blemished and rotten fruit; dispose waste following SOP	2	3	-	-
PC7. cut fruits manually or load the fruits in the chopper/cutter/slicer/grating or grinding machine, adjust controls to cut/grate fruits to required size, start machine and then collect sliced/grated fruits from the discharge chute	2	5	-	-
Extract fruit juice	**14.5**	**26.5**	**-**	**-**
PC8. start the conveyor and control speed to transfer fruits to juice extractors (in case of citrus fruits), crusher and fruit mills (for fruits such as apples, pear, etc.), or stem and seed remover (grapes and berries)	2	5	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC9. set controls such as speed/rotation of stem and seed remover machine, start machine and feed fruits such as grapes and berries though conveyor to remove stem and seed; dispose waste following SOP	1	2	-	-
PC10. set controls such as speed/rotation, feed rate, etc. of citrus fruit extractor or rotary press machine to extract juice from citrus juice (citrus fruit extractor), start machine and open valves to allow citrus fruits to pass though machine to extract juice; simultaneously remove peel and seeds, collect juice flowing though the discharge outlet in collection tank; dispose waste following SOP	1	2	-	-
PC11. set controls such as speed/rotation of fruit mills (fruit grinding mill/grater mill/ hammer mill) depending on the type of fruit, start machine and open valves to allow fruits such as apple, pear, etc. to pass through machine for grinding fruit into fine gratings	2	3	-	-
PC12. measure enzymes required for batch following formulation chart, pump cut/ grated fruit into reservoir tank and add measured quantity of enzymes (for selected fruits like apple), set timer for fruit-enzyme contact time following SOP and allow to stand for specified time for enzyme activity	1	2	-	-
PC13. adjust controls such as speed/rotation of pressing machines (hydraulic press/ cloth press/ continuous belt press / screw press, etc.), start machine and open valves to allow (enzyme treated) fruits such as apple, pear, etc. to pass through machine for extraction of juice and removal of peel, stem and seeds, collect juice in collection tank; dispose waste following SOP	1	2	-	-
PC14. open valve of start pump to transfer fruit juice to filter for removing small suspended particles (in case of apple, pear, etc.), collect filtered juice in collection tank	4	6	-	-
PC15. change sieves or clean sieves of juice extraction machines to avoid clogging; change or sharpen blades of fruit mills for better grinding	0.5	1.5	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC16. check the quality of extracted juice through physical parameters such as appearance, colour, consistency, flavour, taste, etc., sample and transfer to quality lab for analysis	2	3	-	-
Pasteurize Juice	**1.5**	**5.5**	**-**	**-**
PC17. set controls such as temperature, steam pressure, etc. of vacuum concentrate machine; start pump to allow fruit juice to pass thorough machine to concentrate fruit juice and recover aroma (aroma stripping	1	4	-	-
PC18. set process parameters such as pressure, temperature, flow rate, time, etc. of pasteurizer	0.5	1.5	-	-
PC19. open valves to allow steam to pass through pasteurizer, observe temperature and pressure gauge and adjust controls to achieve required pressure and temperature	-	-	-	-
PC20. open valves to allow juice to pass to the pasteurizer, monitor and maintain process parameters throughout the pasteurization process (pasteurize cloudy juice immediately after pressing)	-	-	-	-
PC21. open valves or start pump to circulate water through heat exchangers to cool pasteurized juice, open valves to allow pasteurised juice to pass through heat exchangers to cool to required temperature, collect in collection tank	-	-	-	-
Clarify Juice	**-**	**-**	**-**	**-**
PC22. measure enzymes required for clarification of juice following formulation chart, add to the pasteurized juice in the collection tank (for obtaining clear juice), start stirrer and control speed for uniform mixing of enzymes	-	-	-	-
PC23. open valves or start pump to allow enzyme treated juice to pass through ultra filtration unit to remove smallest particles and obtain clear juice	-	-	-	-
PC24. check quality of juice through physical parameters such as colour, appearance, flavour, taste, etc., sample and transfer to lab for quality analysis and to ensure conformance to standards	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC25. pump processed juice to the holding /reservoir tanks and store maintaining storage parameters until packaging or further processing (to prepare squash)	-	-	-	-
Prepare Squash	**-**	**-**	**-**	**-**
PC26. open valve to admit measured quantity of water into steam jacketed kettle/tank, observe gauge or designated mark for filled quantity	-	-	-	-
PC27. measure sugar (add acids if specified in the formulation) and add it to water in the kettle/tank to prepare sugar syrup, turn on mixer/agitator and control speed to mix ingredients	-	-	-	-
PC28. turn valves to admit steam into kettle/tank, set required pressure, temperature and time to heat the solution following sop, observe pressure and temperature gauge, adjust valves to maintain set parameters	-	-	-	-
PC29. check sugar syrup using refractometer instrument to conform its specifications to standards, open valves or start pump to allow sugar syrup to pass through filter to remove undesirable particles and sediments, collect filtered sugar syrup in storage or holding tanks	-	-	-	-
PC30. start pump to transfer measured quantity of (single or multiple fruit) juice concentrate or clarified juice (depending on type of product produced) , water, sugar syrup into blending tank; check pumped quantity through the level indicator and glass windows of the tank, add measured quantity of acids, preservatives, colour, flavor, etc. following sop, set controls of stirrer/agitator (mixing speed, mixing time, etc.) and start mixer, observe mixing process, collect sample and check physical parameters to ensure uniform mixing	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC31. adjust controls to set temperature, pressure, etc. of pasteurizer/heat exchanger; turn valves to admit steam, start pump to transfer blended product into pasteurizer/heat exchanger, check dials and adjust gauges to control process parameters, open valves to allow water to pass thorough heat exchanger to cool product, open valves to collect finished product in storage tank, to hold until packaging	-	-	-	-
PC32. check the quality of finished product through physical parameters (appearance, colour, consistency, flavour, taste etc.), sample and transfer to quality lab for analysis and to ensure conformance to quality standards	-	-	-	-
Fill, pack and store juice and squash	-	-	-	-
PC33. start pump to transfer finished product into the filling tank of packaging machine	-	-	-	-
PC34. load packing materials (tetra packs, glass bottles, plastic containers, etc.) in packaging machine, sealing materials (caps, lids, crowns, etc.) in sealing machine, labels in labelling machine; set machine for filling volume, set date coding machine for date code details (batch number, date of manufacture, date of expiry, etc.)	-	-	-	-
PC35. start automatic packaging machine to form packaging materials, wash bottle/plastic containers, fill measured quantity of finished products, close/seal and label, check the weight of packed product periodically to ensure its conformance to standards	-	-	-	-
PC36. set controls of straw attaching machine and start machine to attach straw in the packaging material (like tetra pack) of packed product	-	-	-	-
PC37. place packed and labelled products in cartons and transfer to storage area and store maintaining storage conditions following SOP	-	-	-	-
PC38. report discrepancies/concerns to department supervisor for immediate action	-	-	-	-
Carry out post production cleaning and regular maintenance of equipment	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC39. clean the work area, machineries, equipment and tools using approved cleaning agents and sanitizers	-	-	-	-
PC40. attend minor repairs/faults of all machines (if any)	-	-	-	-
PC41. ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment following the sop or following suppliers instructions/manuals	-	-	-	-
NOS Total	**35**	**65**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N0103
NOS Name	Produce Squash and Juice
Sector	Food Processing
Sub-Sector	Fruits and Vegetables, Bread and Bakery, Packaged Goods
Occupation	GENERIC
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	23/06/2023
Next Review Date	23/06/2026
NSQC Clearance Date	23/06/2023

FIC/N9901: Implement health and safety practices at the workplace

Description

This unit is about following health and safety procedures at the workplace.

Scope

The scope covers the following :

- Ensure food safety and personal hygiene
- Follow safety measures to avoid accidents
- Follow emergency procedures
- Manage infection control

Elements and Performance Criteria

Ensure food safety and personal hygiene

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

PC1. follow relevant practices to avoid cross contamination at all stages of food processing operations

PC2. follow organisational procedures for handling items that may cause allergic reactions

PC3. follow Good Manufacturing Practices (GMP) at the workplace. Good Manufacturing Practices: location and layout (ergonomics), cleaning and sanitation, equipment and containers, pest control, facilities (lighting, water supply, drainage and waste disposal, air quality and ventilation), food storage, transportation, and distribution (Source: Schedule IV, FSSAI Licensing and Registration, 2011)

PC4. follow Good Hygiene Practices (GHP) at the workplace appropriately. Good Hygiene Practices: use of gloves, hairnets, masks, ear plugs, goggles, shoes etc; washing hands regularly; treating injuries such as cuts, boils, skin infections and grazes; preventive health check-ups ; getting vaccinated whenever required. (Source: Schedule IV, FSSAI Licensing and Registration, 2011)

Follow safety measures to avoid accidents

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

PC5. use protective clothing/equipment for specific tasks and work conditions

PC6. identify job-site hazardous work and possible causes of risk or accident at the workplace

PC7. deal with hazards safely and appropriately to ensure safety of self and others as per organisational protocol

PC8. use various types of fire extinguishers effectively

PC9. respond promptly and appropriately to an accident situation or medical emergency

PC10. provide cardio-pulmonary resuscitation (CPR) as per the requirement (e.g. cardiac arrest)

Follow emergency procedures

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

PC11. follow workplace emergency and evacuation procedures

PC12. use safe methods to free a person from electrocution

PC13. administer appropriate first aid to victims in case of cuts, bleeding, burns, choking, electric shock, poisoning etc.

Manage infection control

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

PC14. use appropriate disinfectants to disinfect the work area and equipment as per organisational protocol

PC15. ensure personal hygiene by washing hands regularly using alcohol based sanitisers and wearing personal protective equipment (PPE)

PC16. report illness of self and others to the supervisor or concerned authority

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. meaning of hazards and risks

KU2. possible causes of risk, hazard or accident in the workplace

KU3. where to find all the general health and safety equipment in the workplace

KU4. health and safety policy and procedures of the organization

KU5. health and safety hazards commonly present in the work environment

KU6. work practices and precautions used to control and prevent risks, hazards and accidents

KU7. applicable standards and regulations as listed in The Food Safety and Standards Act, 2006

KU8. importance of each personal protective equipment used such as eye protection, hard hats, gloves apron, rubber boots, etc.

KU9. importance of ensuring personal hygiene at the workplace

KU10. ways to prevent cross contamination at the workplace

KU11. importance of storing food at specified temperatures

KU12. various dangers associated with the use of electrical and other equipment

KU13. preventive and remedial actions to be taken in the case of exposure to toxic materials

KU14. various causes of fire and the ways to prevent them

KU15. techniques of using the different fire extinguishers

KU16. procedure followed for providing cardio-pulmonary resuscitation (CPR) to the affected

KU17. rescue techniques applied during a fire hazard

KU18. various types of safety signs and what they mean

KU19. workplace emergency and evacuation procedures

KU20. appropriate basic first aid treatment relevant to the condition e.g. shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries

KU21. potential injuries and ill health conditions associated with incorrect manual handing

KU22. safe lifting and carrying practices

KU23. safe practices to be followed for ensuring sanitisation of self and work area

KU24. procedure for storing the sanitising materials appropriately

Generic Skills (GS)

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

GS1. write an accident/incident report in local language or English

GS2. read and comprehend basic content to read labels, charts, signages, symbols and product manuals

GS3. communicate with coworkers appropriately in order to clarify instructions and other issues

GS4. make appropriate decisions pertaining to the concerned area of work regarding the work objective, span of authority, responsibility, laid down procedure and guidelines

GS5. plan and organize the work schedule, work area, tools, equipment and materials for improved productivity

GS6. identify probable solutions to the problems in hand and evaluate them

GS7. seek official and authorised sources of help and guidance to resolve problems that cannot be solved at one's level of authority

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Ensure food safety and personal hygiene	**7**	**19**	**-**	**-**
PC1. follow relevant practices to avoid cross contamination at all stages of food processing operations	1	4	-	-
PC2. follow organisational procedures for handling items that may cause allergic reactions	1	4	-	-
PC3. follow Good Manufacturing Practices (GMP) at the workplace. Good Manufacturing Practices: location and layout (ergonomics), cleaning and sanitation, equipment and containers, pest control, facilities (lighting, water supply, drainage and waste disposal, air quality and ventilation), food storage, transportation, and distribution (Source: Schedule IV, FSSAI Licensing and Registration, 2011)	3	7	-	-
PC4. follow Good Hygiene Practices (GHP) at the workplace appropriately. Good Hygiene Practices: use of gloves, hairnets, masks, ear plugs, goggles, shoes etc; washing hands regularly; treating injuries such as cuts, boils, skin infections and grazes; preventive health check-ups ; getting vaccinated whenever required. (Source: Schedule IV, FSSAI Licensing and Registration, 2011)	2	4	-	-
Follow safety measures to avoid accidents	**11**	**24**	**-**	**-**
PC5. use protective clothing/equipment for specific tasks and work conditions	2	4	-	-
PC6. identify job-site hazardous work and possible causes of risk or accident at the workplace	2	4	-	-
PC7. deal with hazards safely and appropriately to ensure safety of self and others as per organisational protocol	2	4	-	-
PC8. use various types of fire extinguishers effectively	2	4	-	-
PC9. respond promptly and appropriately to an accident situation or medical emergency	1	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. provide cardio-pulmonary resuscitation (CPR) as per the requirement (e.g. cardiac arrest)	2	4	-	-
Follow emergency procedures	**6**	**12**	**-**	**-**
PC11. follow workplace emergency and evacuation procedures	2	4	-	-
PC12. use safe methods to free a person from electrocution	2	4	-	-
PC13. administer appropriate first aid to victims in case of cuts, bleeding, burns, choking, electric shock, poisoning etc.	2	4	-	-
Manage infection control	**6**	**15**	**-**	**-**
PC14. use appropriate disinfectants to disinfect the work area and equipment as per organisational protocol	3	7	-	-
PC15. ensure personal hygiene by washing hands regularly using alcohol based sanitisers and wearing personal protective equipment (PPE)	1	4	-	-
PC16. report illness of self and others to the supervisor or concerned authority	2	4	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N9901
NOS Name	Implement health and safety practices at the workplace
Sector	Food Processing
Sub-Sector	Generic
Occupation	Generic
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	23/06/2023
Next Review Date	23/06/2026
NSQC Clearance Date	23/06/2023

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:

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.

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

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

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
Constitutional values – Citizenship	**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	-	-	-	-
Becoming a Professional in the 21st Century	**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	-	-	-	-
Basic English Skills	**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	-	-	-	-
Career Development & Goal Setting	**1**	**2**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
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	**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	-	-	-	-
Diversity & Inclusion	**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	-	-	-	-
Financial and Legal Literacy	**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	-	-	-	-
Essential Digital Skills	**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	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Entrepreneurship	**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	-	-	-	-
Customer Service	**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	-	-	-	-
Getting ready for apprenticeship & Jobs	**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	-	-	-	-
NOS Total	**20**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0102
NOS Name	Employability Skills (60 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	23/06/2023
Next Review Date	23/06/2026
NSQC Clearance Date	23/06/2023

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down the proportion of marks for Theory and Skills Practical for each PC.

2. The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.

3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.

4. Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training center (as per the assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practicals for every student at each examination/training center based on this criterion.

6. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.

7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

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.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
FIC/N0111.Produce jam, jelly and ketchup	50	50	-	-	100	10
FIC/N0122.Produce fruit pulp from various fruits	90	95	-	-	185	20
FIC/N0203.Carry out preservation of fruits and vegetables	30	70	-	-	100	10
FIC/N0204.Carry out production of various types of pickles and pastes	30	70	-	-	100	20
FIC/N0129.Sort and grade produce	39	69	-	-	108	10
FIC/N0103.Produce Squash and Juice	35	65	-	-	100	10
FIC/N9901.Implement health and safety practices at the workplace	30	70	-	-	100	10
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	10
Total	**324**	**519**	**-**	**-**	**843**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
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

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.
National Occupation Standard	NOS defines 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.
Qualification	A formal outcome of an assessment and validation process is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
Qualification File	A Qualification File is a template designed to capture necessary information about a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service, or technology.
Long Term Training	Long-term skilling means any vocational training program undertaken for a year and above