Fruit Processor

Short term Curriculum

(Competency Based)

Council for technical education and vocational training
Curriculum Development Division
Sanothimi, Bhaktapur
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Table of Contents

Introduction:

This curriculum has been developed with a purpose of preparing fruit processor as a lower level technical workforce able to get employment in the country. The technical skills incorporated in this curriculum come from the field of fruit processing. Its contents are organized in the form of modules. So it is a tailor made curriculum with a special purpose to be implemented in a modular form.

It is a competency based curriculum. It is also designed to produce lower level technical workforce in the field of fruit processing equipped with skills and knowledge related to fruit processing in order to meet the demand of such workforce in the country and abroad so as to contribute in the national streamline of poverty reduction in Nepal.

Aims

The aim of this curricular program is to produce skilled workforce in the field of fruit processing by providing training to the potential citizen of the country and link them to employment opportunities in the country and abroad. The aims of this curriculum are:

- To produce lower level technical workforce in the area of fruit processing
- To produce such technical workforce who will be able to serve the community and household people through the application of the fruit processing techniques being an entrepreneur

Objectives:

After the completion of this training program, the trainees will be able:

- To apply principles of fruit preservation
- To prepare fruits for processing
- To manage and handle fruit processing machines/tools /equipment /machines/materials
- To prepare different fruit products applying fruit processing techniques (jam, jellies, marmalades, candies, Chatneys, sauces, pickles, fruit juices, squashes, fermented beverages, vinegar etc)
- To perform fruit storage
- To establish fruit processing unit /plant
- To apply storage and post harvest operation of fruits
- To perform marketing of processed fruit products

Description:

This curriculum provides skills and knowledge necessary for fruit processor as a technical worker. There will be both demonstration by trainers/instructors and opportunity by trainees to carry out the skills/tasks necessary for this level of technical workforce. Trainees will practice and learn skills by using typical tools, materials and equipment necessary for this curricular program.

On successful completion of this training, the trainees will be able to apply principles of fruit preservation, manage tools/equipments/machines of fruit processing, perform bottling of fruits products, prepare and manage jam, jellies, marmalades, candies, Chatneys, sauces, pickles, juices squashes etc, fermented beverages, vinegar, perform drying of fruits, utilize by-products, perform fruit storage, establish fruit processing unit / plant, and perform marketing of processed fruit products.

Duration:
The total duration of this curricular program will be 390 hours (3 months)

Target group:
The target group for this training will be all the interested individuals of the country with academic qualification of grade eight pass.

Group size:
The group size of this training program will be not more than 24

Target location:
The target location of this training program will be all over Nepal.

Medium of Instruction:
The medium of instruction for this training program will be Nepali or English or both.

Pattern of attendance:
The trainees should have 80% attendance in theory classes and 90% in Practical (Performance) to be eligible for internal assessment and final examinations.

Focus of the program:
This is a competency based curriculum. This curriculum emphasizes on competent performance of the task specified in it. Not less than 80% time is allotted to the competencies and not more than 20% to the related technical knowledge. So, the main focus will be on the performance of the specified competencies/tasks /skills included in this curriculum.

Entry criteria:
Individuals who meet the following criteria will be allowed to enter in this curricular program:

- Eight grade pass
- Physically and mentally fit
- Age : 16-25 years

Preference will be given to female, Dalit, Janajati, and Conflict affected people

Follow up suggestion:
This is not a training program only for training sake. The ultimate success of this program will rest on the proficiency of the graduates of this training program in providing services in the community either by wage employment or by self-employment.
In other to assess the success of this program and collect feedbacks/inputs for the revision of the program, a schedule of follow up is suggested as follows:-

- First follow up: - Six months after the completion of the training program.
- Second follow up: - Six months after the completion of the first follow up.

Follow up cycle: - In a cycle of one year after the completion of second follow up for five years

Certificate requirement:

The related training institute will provide the certificate of "Fruit processor" to those individuals who successfully complete all the tasks with their related technical knowledge specified in this curriculum.

Student Evaluation Details:

- Continuous evaluation of the trainees' performance is to be done by the related instructor/trainer to ensure the proficiency over each competency.
- Related technical knowledge learnt by the trainees will be evaluated through written or oral tests as per the nature of the content

Trainees must secure minimum marks of 60% in an average of both theory and practical evaluations.

Trainers' Qualification:

- Bachelor's degree or equivalent in the related field
- At least 2 weeks TOT training from authorized institutions
- Good communicative & instructional skills.
- Minimum one year experience in fruit processing industry or training.

Trainer - Trainees Ratio: 1:10

Suggestion for instruction:

1. Demonstrate task performance

- Introduce skills and make readiness the learners to learn the skills
- Demonstrate task performance in normal speed
- Demonstrate slowly with verbal description of each and every steps in the sequence of activity flow of the task performance using question and answer techniques
- Repeat the above step for the clarification on trainees demand if necessary.
- Perform fast demonstration of the task performance.

Provide trainees the opportunity to practice the task performance demonstrated.

- Provide trainees to have guided practice:- create environment for practicing the demonstrated task performance and guide the trainees in each and every step of task performance
- Provide trainees the opportunity to repeat & re-repeat as per the need to be proficient on the given task performance
- Give project work to apply learned skills and to become competent in each skills
- Switch to another task demonstration if and only if the trainees developed proficiency in the given task performance

Evaluation performance of the trainees/ student

- Perform task analysis
- Develop a detail task performance check list
- Perform continuous performance evaluation of the trainees / students by applying the performance check list.
- Keep regular performance record
- Monitor the performance record and

Course Structure

SN	Modules sub modules and areas	Time (hrs.)			Marks		
		T	P	Total	T	P	Total
1	**Introduction and Basics for fruit processing**	**20**	**120**	**140**	**20**	**80**	**100**
	1. Introduction of fruit processing	5	10	15			
	2. Principles, tools, materials and equipment	5	10	15			
	3. Basic operations of fruit processing	10	100	110			
2	**Fruit processing**	**10**	**45**	**45**	**8**	**32**	**40**
	1. Processing fresh fruit products	5	30	35			
	2. Processing dry fruits	4	16	20			
3	**Bottling/canning of fruit products**	**5**	**20**	**25**	**4**	**16**	**20**
4	**Processing of fruit products**	**20**	**90**	**110**	**20**	**80**	**100**
	1. Fruit Jam, Jellies and Marmalades	2	4	6			
	2. Fruit preserves / candies	4	18	22			
	3. Fruit Chutanies, Sauces and Pickles	4	16	20			
	4. Natural Fruit Juices, Squashes	4	18	22			
	5. Fermented fruit beverages	2	14	16			
	6. Fruit vinegars	2	8	10			
	7. Drying of fruits	2	12	14			
5	**Management and communication**	**5**	**15**	**20**	**4**	**16**	**20**
6	**Entrepreneurship development**	**18**	**22**	**40**	**4**	**16**	**20**
	Total	**78**	**302**	**390**	**60**	**240**	**300**

Modules and Sub Modules

Module 1. Introduction and Basics for fruit processing

Sub module 1. Introduction of fruit processing

Description: It deals with the knowledge and skills related to introduction of food processing, identification and characteristics of common fruits. It consists of tasks related to introduction of fruit processing. Each task structure consists of steps, terminal performance objective, and minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner.

Objectives: After its completion the trainees will be able:

- To introduce fruit processing

Tasks: To fulfill the objectives the trainees are expected to get proficiency on the following tasks:

1. Introduce of fruit processing
2. Identify different fruits with their classification
3. Be familiar with characteristics of common fruits

Task Analysis

Task 1 : Introduce of fruit processing		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Explain fruit processing 3. Enlist importance of fruit processing 4. Explain scope of fruit processing	**Condition (Given):** Reading materials **Task (What):** Introduce fruit processing **Standard (How well):** As prescribed criteria	• Definition of fruit processing • Scope and importance processing • Type of fruit processing
Tools/materials/ equipment:	Safety/precautions:	
Paper, pen, and other supplies		

Task 2 : Identify different fruits with their classification		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Enlist common name of different common fruits 3. Classify the fruits as their climatic region 4. Prepare list of temperate fruits 5. Prepare list of tropical fruits	**Condition (Given):** Reading materials **Task (What):** Identify fruits with classification **Standard (How well):** As prescribed criteria	• Common name of fruits • Climatic and non climatic fruits
Tools/materials/ equipment:	Safety/precautions:	
Paper, pen, fruits		

<table>
<tr><td colspan="2">Task 3 : Characteristics of common fruits</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Prepare materials/tools
3. Enlist common characteristics of given fruits :
• Apple
• Papaya
• Banana
• Citrus
• Pineapple
• Bel
• Lapsi
• Mango
• Litchi
• Amala
• Fruit available in local area</td><td>Condition (Given):
As assign by supervisor

Task (What):

Enlist common characteristics of given fruits

Standard (How well):

As prescribed criteria</td><td>• Common name of fruits
• Common characteristics of fruits based on :
▪ Test
▪ Maturity and ripening time duration
▪ Edible parts
▪ Color
▪ Post harvest handling and storage
▪ Temperature requirement etc.</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Paper, pen, and other supplies</td><td colspan="2"></td></tr>
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Sub module 2. Principles, tools, materials and equipment

Description: It deals with the knowledge and skills related to principles of food preservation; handling, management, and care for the related tools, materials, equipment, and fruit packaging containers. It consists of tasks related to principles of food preservation; handling, management, and cares for the related tools, materials, equipment, and fruit packaging containers. Each task structure consists of steps, terminal performance objective, and minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner.

Objectives: After its completion the trainees will be able:

- To Apply principles of preservation
- To Manage/handle/maintain containers for packing
- To Manage/handle materials / tools / equipment / machines
- To apply post harvest handling and storage

Tasks: To fulfill the objectives the trainees are expected to get proficiency on the following tasks:

1. Apply principles of preservation
2. Manage/handle/maintain containers for packing
3. Manage/handle materials / tools / equipment / machines
4. Perform post harvest handling and storage of fruits

<table>
<tr><td colspan="2">Task 1 : Apply principles of preservation</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Apply principle of delaying the growth of micro-organisms
3. Apply principle of asepsis / keeping out the micro-organisms
4. Apply principle of removal of micro-organisms
5. Apply principle of high temperature preservation
6. Apply principle of sterilization
7. Apply principle of pasteurization
8. Apply principle of blanching
9. Apply principle of low temperature preservation
10. Apply principle of cold storage
11. Apply principle of freezing storage
12. Apply principle of sugared preservation
13. Apply principle of salted preservation
14. Apply principle of chemical preservation
15. Apply principle of sulphur dioxide preservation
16. Apply principle of sodium benzoate preservation
17. Apply principle of preservation by fermentation
18. Apply principle of fermentation of fruit juice
19. Apply principle of fermentation to vinegar
20. Apply principle of distillation
21. Apply principle and mechanism of preservation by drying
22. Apply principle of sun drying
23. Apply principle of artificial drying
24. Keep records</td><td>Condition (Given):
As assign by supervisor
Task (What):
Apply principles of preservation
Standard (How well):
As prescribed criteria</td><td>• Concept, need, and application of the following principles in fruit preservation and processing:
• Principle of delaying the growth of micro-organisms
• Principle of asepsis / keeping out the micro-organisms
• Principle of removal of micro-organisms
• Principle of high temperature preservation
• Principle of sterilization
• Principle of pasteurization
• Principle of blanching
• Principle of low temperature preservation
• Principle of cold storage
• Principle of freezing storage
• Principle of sugared preservation
• Principle of salted preservation
• Principle of chemical preservation
• Principle of sulphur dioxide preservation
• Principle of sodium benzoate preservation
• Principle of preservation by fermentation
• Principle of fermentation of fruit juice
• Principle of fermentation to vinegar
• Principle of distillation
• Principle and mechanism of preservation by drying
• Principle of sun drying
• Principle of artificial drying</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Paper, pen, and other supplies</td><td colspan="2">• Be familiar with the principles of preservation well before their application.</td></tr>
</table>

Task 2 : Manage/handle/maintain containers for packing		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. List types of containers for packing 3. Identify containers for packing 4. Select specific containers for packing specific fruit products 5. Manage/handle/maintain tin containers 6. Perform lacouering 7. Manage/handle/maintain glass containers 8. Manage/handle polyethylene [PE] packaging materials 9. Manage/handle polyprophylene [PP] packaging materials 10. Manage/handle paper packaging materials 11. Take precautions 12. Keep records	**Condition (Given):** As assigned by supervisor Task (What): Manage/handle/maintain containers for packing Standard (How well): As prescribed criteria	• Concept, need, and application of the containers for packing • Types of containers for packing • Name and functions • Precautions to be taken •
Tools/materials/ equipment:	Safety/precautions:	
Paper, pen, and other supplies, various types containers	▪ Be familiar with the containers before handling them. ▪ Handle containers safely	

Task 3 : Manage/handle/maintain materials / tools / equipment / machines for fruit processing		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Manage/handle fruits 3. Manage/handle fruit preservatives 4. Manage/handle coloring materials 5. Manage/handle/ maintain water filters 6. Manage/handle/ maintain pineapple eye remover 7. Manage/handle/ maintain peeling knife 8. Manage/handle/ maintain can opener / cork remover 9. Manage/handle/ maintain core remover 10. Manage/handle/ maintain cutting knife 11. Manage/handle/ maintain pitting knife 12. Manage/handle/ maintain pineapple puncher 13. Manage/handle/ maintain corer / seed remover 14. Manage/handle/ maintain can sealer 15. Manage/handle/ maintain bottle sealer 16. Manage/handle/ maintain pressure cooker with pressure gauge 17. Manage/handle/ maintain hand pulpers 18. Manage/handle/ maintain electric pulpers / pulping machine 19. Manage/handle/ maintain steam jacketed kettle 20. Manage/handle/ maintain refractometer 21. Manage/handle/ maintain thermometer / jelly thermometer 22. Manage/handle apple grater 23. Manage/handle/ maintain basket press 24. Manage/handle/ maintain crown corking machine	**Condition (Given):** As assigned by supervisor **Task (What):** Manage/handle/maintain containers for packing **Standard (How well):** As prescribed criteria	• Concept, need, and application of materials / tools / equipment / machines for fruit processing • Manage/handle fruits • Manage/handle fruit preservatives • Manage/handle coloring materials • Manage/handle/ maintain water filters • Manage/handle/ maintain pineapple eye remover • Manage/handle/ maintain peeling knife • Manage/handle/ maintain can opener / cork remover • Manage/handle/ maintain core remover • Manage/handle/ maintain cutting knife • Manage/handle/ maintain pitting knife • Manage/handle/ maintain pineapple puncher • Manage/handle/ maintain corer / seed remover • Manage/handle/ maintain can sealer • Manage/handle/ maintain bottle sealer • Manage/handle/ maintain pressure cooker with pressure gauge • Manage/handle/ maintain hand pulpers • Manage/handle/ maintain electric pulper / pulping machine • Manage/handle/ maintain steam jacketed kettle • Manage/handle/ maintain refractometer • Manage/handle/ maintain thermometer / jelly thermometer

25. Manage/handle/ maintain fermentation bung 26. Manage/handle/ maintain vinegar generator 27. Manage/handle funnel 28. Manage/handle/ maintain plastic tubes and clamps 29. Manage/handle bottles 30. Manage/handle caps 31. Manage/handle/ maintain water cans 32. Manage/handle/ maintain capping machine 33. Manage/handle gloves 34. A Manage/handle/ maintain apple corer / peeler / slicer machine 35. Manage/handle/ maintain Hand peeler 36. Manage/handle/ Glass / liter measure / 5 liter jerkin 37. Manage/handle Filtering cloth 38. Manage/handle sieve 39. Manage/handle Rods 40. Manage/handle/ maintain sulphuring cabinets 41. Manage/handle/ maintain fillers 42. Manage/handle/ maintain pasteurization container / equipment 43. Manage/handle/ maintain bottle washing tools / equipment 44. Manage/handle/ maintain sterilizers 45. Manage/handle/ maintain capping machine 46. Manage/handle/ maintain jar sealer 47. Manage/handle/ maintain air lock 48. Manage/handle/ maintain hydrometer 49. Manage/handle/ maintain corking equipment 50. Manage/handle/ maintain juice extractor / juicer machine 51. Manage/handle/ maintain fruit press		• Manage/handle apple grater • Manage/handle/ maintain basket press • Manage/handle/ maintain crown corking machine • Manage/handle/ maintain fermentation bung • Manage/handle/ maintain vinegar generator • Manage/handle funnel • Manage/handle/ maintain plastic tubes and clamps • Manage/handle bottles • Manage/handle caps • Manage/handle/ maintain water cans • Manage/handle/ maintain capping machine • Manage/handle gloves • A Manage/handle/ maintain apple corer / peeler / slicer machine • Manage/handle/ maintain Hand peeler • Manage/handle/ Glass / liter measure / 5 liter jerkin • Manage/handle Filtering cloth • Manage/handle sieve • Manage/handle Rods • Manage/handle/ maintain sulphuring cabinets • Manage/handle/ maintain fillers • Manage/handle/ maintain pasteurization container / equipment • Manage/handle/ maintain bottle washing tools / equipment • Manage/handle/ maintain sterilizers • Manage/handle/ maintain capping machine • Manage/handle/ maintain jar sealer • Manage/handle/ maintain air lock

52. Manage/handle/ maintain crusher 53. Manage/handle/ maintain coolers 54. Manage/handle/ maintain heat sealer 55. Take precautions 56. Keep records		• Manage/handle/ maintain hydrometer • Manage/handle/ maintain corking equipment • Manage/handle/ maintain juice extractor / juicer machine • Manage/handle/ maintain fruit press • Manage/handle/ maintain crusher • Manage/handle/ maintain coolers • Manage/handle/ maintain heat sealer • Precautions to be taken • Keeping records
Tools/materials/ equipment:	Safety/precautions:	
Materials, tools, equipment, machines for fruit processing	▪ Be familiar with the materials / tools / equipment / machines for fruit processing before handling them. ▪ Handle materials / tools / equipment / machines for fruit processing safely	

Task 4 : Harvest fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Prepare tools/materials ready 3. Decide the methods of harvesting 4. Use stand/climb on the tree 5. Cut/pick single/bunch as per type and nature of fruit without droping on the ground 6. Put on tray/container/basket 7. Take precaution on personal safety and fruit safety. 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Perform harvesting of of fruits **Standard (How well):** As per characteristics and nature of fruits	• Concept of harvest and safety handling of fruits. • Nature of damage during harvesting of specific fruits • Take precaution
Tools/materials/ equipment:	Safety/precautions:	
Fruits garden and harvesting equipment	▪ Handle and safely	

Task 5 : Perform post harvest handling and storage of fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Prepare tools/materials ready 3. Identify the characteristics of fruits by their size, nature of damaging, weight 4. Identify the container for transportation 5. Identify the type of store 6. Enlist the type of store for specific fruits 7. Perform handling of fruits 8. Perform storage of fruits 9. Take precaution while handling 10. Take precaution in store 11. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Perform post harvest handling and storage of fruits **Standard (How well):** As per characteristics and nature of fruits	• Concept of post harvest handling and storage of fruits, need, and application of its • Characteristics and nature of fruits • Type of container for handling and transportation of fruits • Type of store as per nature of fruits • Temperature requirement • Lasting period of fruits after harvesting • Causes of damage during handling and storage • Take precaution
Tools/materials/ equipment:	Safety/precautions:	
Fruits, container, store	▪ Handle and store safely	

Sub module 3. Basic operations of fruit processing

Description: It deals with the knowledge and skills related to the basic operations necessary for fruit processing. It consists of tasks related to the basic operations for fruit processing. Each task structure consists of task steps, terminal performance objective, and minimum related technical knowledge necessary to carry out that very task.

Objectives: After its completion the trainees will be able:

- To identify the basic operations necessary for fruit processing
- To be familiar with the basic operations necessary for fruit processing
- To carry out the basic operations necessary for fruit processing
- To take safety/precautions while carrying out the basic operations necessary for fruit processing
- To record the related activities carried out, in a technically accepted standard form.

Tasks: To fulfill the objectives the trainees are expected to get proficiency on the following tasks:

1. Select fruits
2. Sort / grade fruits
3. Prepare clean water for washing fruits
4. Prepare chlorinated water for washing fruits
5. Wash fruits
6. Carry out peeling under hygienic conditions
7. De-stone fruits
8. Cut fruits
9. Perform hydric basket pressing of fruits
10. Extract juice by reaming /squeezing the fruits
11. Extract juice by pulping the fruits
12. Extract fruit juice by using blender
13. Filter/ strain the extracted fruit juice
14. Perform testing of acidity level by pH meter
15. Measure temperature
16. Measure small amount of ingredients
17. Measure sugar content
18. Identify non fruit ingredients
19. Perform sulphyting
20. Prepare syrups
21. Mix Sugar
22. Mix acids
23. Mix vinegar / acetic acid
24. Add pectin
25. Extract pectin
26. Boil fruit products
27. Perform exhausting
28. Pasteurize in a pan
29. Pasteurize bottled fruits
30. Select containers for packaging
31. Wash containers
32. Prepare / sterilize containers

33. Fill containers
34. Perform screwed on / pushed on / can sealing
35. Perform heat sealing of plastic bags
36. Perform cooling of glass / metal containers
37. Packaging of fruit products
38. Perform labeling
39. Perform storage of the labeled fruit products
40. Present products
41. Control quality

Task 1 : Select fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select fruits of highest quality 3. Select fruits of the required level of maturity 4. Select fruits of required ripeness 5. Select fruits having no mold 6. Select fruits having no bruising 7. Select fruits of correct sizes 8. Select fruits of correct color **9.** Select fruits having no insect damage 10. Select fruits of correct varieties 11. Take precautions 12. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Select fruits for processing **Standard (How well):** As prescribed criteria	Selecting fruits for processing: • Fruits selection criteria • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Fruits, containers	▪ Beware of the spoilage of whole batch by the presence of a small quantity of unsound material.	

Task 2 : Sort / grade fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain fruits 3. Sort fruits by hand 4. Grade fruits by hand 5. Grade fruits by screen grader 6. Grade fruits by roller grader 7. Obtain a pack of uniform quality in terms of size, color etc 8. Take precautions 9. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Short/grade fruits **Standard (How well):** As prescribed criteria	• Criteria for shorting • Importance shorting • Quality in terms of size, color etc • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Screen grader, roller grader, containers etc.	▪ Beware to handle fruits while sorting and grading them. ▪ Handle graders safely	

Task 3 : Prepare clean water for washing fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain water 3. Prepare boiled water 4. Filter water by locally made filters 5. Filter water by commercial filters 6. Clean water by pressure purifiers 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Grate fruits **Standard (How well):** As prescribed criteria	• Concept of washing • Importance • Cleaning agents • Precautions
Tools/materials/ equipment:	Safety/precautions:	
Filters, purifiers, containers	▪ Handle filters and purifiers safely	

Task 4 : Prepare chlorinated water for washing fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Take household bleach 3. Take clean water 4. Add the household bleach to the water (1 teaspoon to 1 gallon or 15 liters and mix properly 5. Take precautions 6. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Prepare chlorinated water for washing fruits **Standard (How well):** As prescribed criteria	• Importance • Quantity • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Household bleach, water, and containers	▪ Handle chlorinated water safely	

Task 5 : Wash fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Wash the fruits in the clean chlorinated water 3. Wash fruits thoroughly in water preferably in running water to remove dust, spray residue etc. 4. Perform soaking / agitating the fruits in water 5. Wash fruits with cold water sprays 6. Wash fruits with hot water sprays 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Wash fruits **Standard (How well):** As prescribed criteria	• Concept • Importance • Washing agents • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Sprays, containers, fruits, water etc.	▪ Beware not to cause bruises while cleaning the fruits ▪ Handle fruits safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 6 : Carry out peeling under hygienic conditions		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain fruits to be peeled 3. Wear clean uniforms 4. Wash hands well before commencing the work 5. Wear gloves 6. Use easily cleaned surfaces such as stone, or metal, or plastic covered wooden tables 7. Keep utensils clean at all stages 8. Carry out peeling under the most hygienic condition 9. Use stainless steel / good quality plastic / wooden utensils or clay cooking vessels 10. Take precautions 11. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Carry out peeling under hygienic conditions **Standard (How well):** As prescribed criteria	• Concept and principles • Concept of hygienic conditions • Why and why to wear gloves • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Fruits, uniforms, gloves, clean surfaces such as stone / metal/ plastic covered wooden tables/utensils	▪ Beware to maintain most hygienic conditions ▪ Handle fruits safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 7 : De-stone fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain fruits to be de-stoned 3. Take de-stoners 4. Make de-stoner ready to operate 5. Take fruits to be de-stoned 6. De-stone the fruits 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** De-stone fruits **Standard (How well):** As prescribed criteria	• Concept and principle • Importance • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
De-stoners	▪ Beware to maintain hygienic condition ▪ Handle de-stoners safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 8 : Cut fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain fruits to be cut 3. Make the equipment, martials ready 4. Cut the fruits 5. Take precautions 6. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Cut fruits. **Standard (How well):** As prescribed criteria	• Concept and principle • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Cutting equipment/ knife	▪ Beware to maintain hygienic condition ▪ Handle cutting equipment/ knife safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 9 : Perform hydratic basket pressing of fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain fruits to be pressed 3. Take a fruit press 4. Make the fruit press ready to operate 5. Take fruits to be pressed 6. Feed the fruits in the fruit press **7.** Operate the fruit press **8.** Collect the juice **9.** Ensure all surfaces that contact fruit be of stainless steel 10. Take precautions 11. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Perform hydratic basket pressing of fruits **Standard (How well):** As prescribed criteria	• Concept and principle of extraction of fruit juice by pressing • Ensuring all surfaces that contact fruit be of stainless steel • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Fruit press	▪ Beware to maintain hygienic condition ▪ Handle fruit press safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 10 :Extract juice by reaming /squeezing the fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain fruits to be reamed / squeezed 3. Make ready equipment, materials for reamed reaming / squeezing **4.** Operate the reaming /squeezing equipment 5. Collect the juice 6. Ensure all surfaces that contact fruit be of stainless steel 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Extract juice by reaming /squeezing the fruits** **Standard (How well):** As prescribed criteria	• Concept and principle of extraction of fruit juice • Ensuring all surfaces that contact fruit be of stainless steel • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Reaming/squeezing equipment	▪ Beware to maintain hygienic condition ▪ Handle reaming /squeezing equipment safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 11 :Extract juice by pulping the fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Make ready the fruit tools/materials for pulping 3. Feed the fruits in the fruit pulper 4. Operate the fruit pulper 5. Collect the juice 6. Ensure all surfaces that contact fruit be of stainless steel 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Extract juice by pulping the fruits **Standard (How well):** As prescribed criteria	• Concept and principle of extraction of fruit juice by pulping • Ensuring all surfaces that contact fruit be of stainless steel • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Pulper	▪ Beware to maintain hygienic condition ▪ Handle pulper safely ▪ Apply GMP (Good Manufactured Hygienic Practice) ▪	

Task 12 :Extract fruit juice by using blender		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Make the tools/materials ready to operate **3.** Operate the blinder 4. Sieve the juice through muslin cloth / plastic sieve 5. Collect the juice 6. Ensure all surfaces that contact fruit be of stainless steel 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Extract fruit juice by using blender **Standard (How well):** As prescribed criteria	• Concept and principle of extraction of fruit juice by using blender • Importance of blending the fruits • Ensuring all surfaces that contact fruit be of stainless steel • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Fruit blinder	▪ Beware to maintain hygienic condition ▪ Handle fruit blinder safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 13 :Filter/ strain the extracted fruit juice		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Prepare tools/materials/equipment 3. Set the muslin cloth bag /jelly bag /strainer ready to strain/filter 4. Feed the extracted fruit juice in the muslin cloth bag /jelly bag /strainer 5. Operate the muslin cloth bag /jelly bag /strainer 6. Collect the juice 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Filter/ strain the extracted fruit juice **Standard (How well):** As prescribed criteria	• Concept, principle, of filtration / straining of fruit juice • Selection criteria for container • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Muslin cloth bag /jelly bag /strainer	▪ Beware to maintain hygienic condition ▪ Handle muslin cloth bag /jelly bag /strainer ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 14 : Perform testing of acidity level by pH meter		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Take a pH meter 3. Prepare pH meter ready to operate 4. Set the pH meter 5. Assess acidity level of fruit products by using pH meter 6. Read pH 7. Record pH 8. Take precautions 9. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Perform testing of acidity level by pH meter **Standard (How well):** As prescribed criteria	• Definition of PH • Concept, principle of testing acidity level by pH meter • Indicators of acidity level in PH Meter • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
pH meter	▪ Beware to maintain hygienic condition ▪ Handle pH meter safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 15 : Measure temperature		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Take a thermometer 3. Prepare thermometer ready to take temperature 4. Set the thermometer 5. Read temperature 6. Record temperature 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Measure temperature **Standard (How well):** As prescribed criteria	• Concept and principle of measuring temperature • Recommended or required temperature for different operations in fruit processing • Decision making • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Thermometer	▪ Beware to maintain hygienic condition ▪ Handle thermometer safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 16 : Measure small amount of ingredients		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Use accurate scale for measuring small amount of ingredients 3. Take measuring equipment / instrument with an accurate scale 4. Set measuring equipment / instrument with an accurate scale 5. Take small amounts of ingredients to be measured 6. Measure small amount of ingredients 7. Read the measurement 8. Record the measurement 9. Take precautions 10. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Measure small amount of ingredients **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of measuring ingredients • Scale for measuring small amount of ingredients • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Measuring equipment/ instrument	▪ Beware to maintain hygienic condition ▪ Handle measuring equipment/ instrument pH paper safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 17 :Measure sugar content		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain the material of which the sugar content is to be assessed 3. Take a refractometer 4. Make refractometer ready to use 5. Set the refractometer 6. Read the level of sugar content 7. Record the level of sugar content 8. Take precautions 9. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Measure sugar content **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of assessing sugar content • Recommended sugar content for specific purpose • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Refractometer	▪ Beware to maintain hygienic condition ▪ Handle measuring refractometer safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 18 : Identify non fruit ingredients		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Identify following non fruit ingredients: • Sugar • Citric acid • Pectin • Vinegar • Acetic acid 3. Take precautions 4. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Identify non fruit ingredients **Standard (How well):** As prescribed criteria	• Concept of mixing non fruit ingredients. • Characteristics of non fruits ingredients of : o Sugar o Citric acid o Pectin o Vinegar o Acetic acid • recommended ratio/amount/quantity • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Sugar, Citric acid, Pectin, Vinegar, Acetic acid, etc.	▪ Beware to maintain hygienic condition ▪ Handle Sugar, Citric acid, Pectin, Vinegar, Acetic acid, etc. safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 19 : Perform sulphuring		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Achieve sulphuring by burning sulphuring in a sulphur cabinet 3. Arrange sulphuring /sulphur cabinet 4. Keep the fruits inside the cabinet 5. Place sufficient sulphur in a container near the trays 6. Ignite the sulphur 7. Allow the sulphur to born in the enclosed cabinet for 1-3 hours 8. Take precautions 9. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Perform sulphyting **Standard (How well):** As prescribed criteria	• Definition and concept • Importance and function • Principle and application of sulphyting • Recommended quantity/ratio • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
	1. Beware to maintain most healthy conditions. 2. Sulphur dioxide is potentially harmful and precautions are necessary to prevent inhalation. 3. Handle Kettle, tank, thermometer, water, heating system safely. 4. Apply GMP (Good Manufactured Hygienic Practice)	

Task 20 : Prepare syrups		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Determine the type of syrup to be prepared as per the requirement of a particular fruit 3. Prepare heavy syrup • Prepare 1:1 sugar water solution 4. Measure sugar percent by hand reflactometer 5. Prepare medium syrup 6. Prepare light syrup 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Prepare syrups **Standard (How well):** As prescribed criteria	• Concept, need, and application of syrups • Classification of syrups as heavy, medium, and light • Principles and procedures for preparing heavy, medium, and light syrups • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Cups, sugar, water, and containers	• Beware to maintain most healthy conditions. • Handle cups, sugar, water, and containers safely. • Apply GMP (Good Manufactured Hygienic Practice)	

Task 21: Mix Sugar		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Prepare tools/materials 3. Measure sugar content of the fruit product 4. Prepare sugar solution • Dissolve sugar in water • Pass the sugar solution through muslin filter • Get the filtered sugar solution as a non fruit ingredient • Assess sugar content of the solution 5. Mix/adjust sugar content of the fruit product 6. Take precautions 7. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Mix Sugar** **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of mixing sugar • Importance • Requirement • Ratio and quantity • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Muslin filter and containers	▪ Beware to maintain hygienic condition ▪ Handle measuring muslin filter and containers safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 22: Mix acids		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Check level of acidity 3. Measure the amount of citric acid powder/ lime / lemon juice to adjust the level of acidity 4. Make citric acid/ lime / lemon juice ready 5. Adjust the level of acidity by the addition of citric acid, either in pore powder form or by adding lime or lemon juice 6. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Mix acids **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of mixing acids • Functions of acid • Quantity/ratio • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Measuring instrument, containers, citric acid/ lime / lemon juice	▪ Beware to maintain hygienic condition ▪ Handle measuring instrument, containers, citric acid, lime, lemon juice safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 23: Mix vinegar / acetic acid		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
Receive instruction Obtain distilled vinegar Obtain acetic acid Prepare solution of distilled vinegar with 10 percent acetic acid Mix it to the fruit products as non fruit ingredients Take precautions Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Mix vinegar / acetic acid **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of mixing vinegar / acetic acid • Importance • Functions • Quantity and ratio • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Measuring instrument, containers, vinegar, acetic acid	▪ Beware to maintain hygienic condition ▪ Handle measuring instrument, containers, vinegar, and acetic acid safely ▪ Apply GMP (Good Manufactured Hygienic Practice) ▪	

Task 24: Add pectin		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain pectin powder 3. Determine the amount to be added 4. Measure the amount to be added 5. Make ready the pectin to add to the fruit product 6. Take precautions 7. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Add pectin **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of adding pectin • Importance • Function • Quantity/ratio • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Measuring instrument, containers, pectin powder	▪ Beware to maintain hygienic condition ▪ Handle measuring instrument, containers, pectin powder safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 25: Extract pectin		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Take skin of pectin rich fruits [citrus, passion fruits] 3. Boil them in water 4. Strain the extract 5. Determine the amount of strained extract that needs to be added to the fruit product 6. Measure the amount needed 7. Add the measured strained extract to the fruit product as non fruit ingredient 8. Take precautions 9. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Extract pectin** **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of extracting pectin • Importance • Functions • Quantity/requirement/ratio • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Measuring instrument, containers, pectin rich fruits, and boiling equipment	▪ Beware to maintain hygienic condition ▪ Handle measuring instrument, containers, pectin rich fruits, and boiling equipment safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 26: Boil fruit products		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain boiling pots of stainless steel / aluminium / enameled metal / clay 3. Obtain the product to be boiled 4. Put the product to be boiled into the boiling pot 5. Supply heat 6. Stir the product vigorously while heating 7. Take care to avoid localized over-heating 8. Concentrate the product to the right level 9. Check the level of sugar content using hand – held refractometer or sugar thermometer 10. Carry out boiling until the desired sugar content is reached 11. Transfer the product into jars while hot 12. Take precautions 13. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Boil fruit products** **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of boiling of fruit products • Needs • Timing and interval • heat requirement • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Measuring instrument, boiling pots of stainless steel / aluminium / enameled metal / clay, containers, boiling equipment, jars, stirrer, and refractometer	▪ Beware to maintain hygienic condition ▪ Handle measuring instrument, containers, boiling pots of stainless steel / aluminium / enameled metal / clay, containers, boiling equipment, stirrer, jars and refractometer safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 27 : Perform exhausting		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Take filled cans / jars 3. Take a large kettle / open tank with water 4. Boil the water 5. Place the cans / jars in the kettle / open tank in such a way that the top of the can / jar is about 5 cm above the level of water in the kettle / tank 6. Place a lid on the kettle / tank 7. Heat the water till the center of the can / jar records a temperature of 80 – 82 degree centigrade 8. Take precautions 9. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Perform exhausting** **Standard (How well):** As prescribed criteria	• Definition, concept, need, principle and application of exhausting • Importance/functions • Types • Requirement of heat and time • Precautions to be taken • Keeping records
Tools/materials/ equipment:	Safety/precautions:	
Kettle, tank, thermometer, water, heating system	• Beware to maintain most healthy conditions. • Handle Kettle, tank, thermometer, water, heating system safely. • Apply GMP (Good Manufactured Hygienic Practice)	

Task 28 : Pasteurize in a pan		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain stainless steel pan 3. Obtain fruit products to be pasteurized 4. Put the fruit products to be pasteurized 5. Raise the temperature immediately to 60-70 degree 6. Heat the pan briefly to the final temperature required for pasteurization 7. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Pasteurize in a pan** **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of pasteurization • Importance • Functions • requirement of heat and time • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Stainless steel pan, heating system, heat manipulation system, heat measuring instrument / thermometer	▪ Beware to maintain hygienic condition ▪ Handle stainless steel pan, heating system, heat manipulation system, heat measuring instrument / thermometer safely. ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 29 : Pasteurize bottled fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Pack hot jars with fruits 3. Fill the jars with boiling sugar syrup 4. Put caps loosely on the jars 5. Stand the jars in a large pan of boiling water for 10 minutes 6. Remove the hot jars from the water bath 7. Tight the lids fully 8. Take precautions 9. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Pasteurize bottled fruits **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of pasteurization • Importance • Functions • requirement of heat and time • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Jars, heat, boiling equipment, sugar.	▪ Beware to maintain hygienic condition ▪ Handle Jars, heat, boiling equipment, sugar safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 30: Select containers for packaging		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Identify the following packaging materials/ containers: • Pickling jars for fruits • Glass containers • Plastic bottles • Plastic bags • Laminated cards • Recycled containers 3. Fix selection criteria 4. Inspect the containers 5. Reject cracked / chipped /suspicious bottles 6. Select containers that meet the selection criteria 7. Take precautions 8. Keep record	**Condition (Given):** As assigned by supervisor **Task (What):** **Select containers for packaging** **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of pasteurization • Importance • Types • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
packaging materials/ containers [pickling jars for fruits, glass containers, plastic bottles, plastic bags, laminated cards, recycled containers]	▪ Beware to maintain hygienic condition ▪ Handle packaging materials/ containers [pickling jars for fruits, glass containers, plastic bottles, plastic bags, laminated cards, recycled containers] safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 31: Wash containers		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Wash containers by hand 3. Wash containers by machine 4. Perform thorough rinsing 5. Take precautions 6. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Wash containers **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of washing container • Importance • Types • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Containers, washing machine, and thorough rinsing equipment	▪ Beware to maintain hygienic condition ▪ Handle containers, washing machine, and thorough rinsing equipment safely. ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 32: Prepare / sterilize containers		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain the containers to be sterilized 3. Set steam – sterilization equipment 4. Set the containers to the equipment 5. Steam -sterilize the bottles until steam comes out of the neck of the bottle 6. Prepare containers for filling 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Prepare / sterilize containers** **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of preparing / sterilizing containers • Importance • Types/methods • Timing • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Steam – sterilization equipment, containers	▪ Beware to maintain hygienic condition ▪ Handle steam – sterilization equipment, containers safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 33 : Fill containers		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain clean/ sterilized containers 3. Use jugs to fill jars directly with fruit products 4. Fill the containers by hand with the fruit product ready to be packaged. 5. Fill the containers by hand operated fillers with the fruit product ready to be packaged. 6. Fill the containers by semi-automatic piston fillers with the fruit product ready to be packaged 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Fill containers** **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of filling containers • Importance • Types/methods • Quantity • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Clean / sterilized containers, jugs, jars, hand operated fillers, semi-automatic piston fillers	▪ Beware to maintain hygienic condition ▪ Handle containers, jugs, jars, hand operated fillers, semi-automatic piston fillers safely. ▪ Apply GMP (Good Manufactured Hygienic Practice) ▪	

Task 33: Perform screwed on / pushed on / can sealing		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Apply screw caps by hand for sealing 3. Apply crown caps by a hand machine for sealing 4. Apply push-on-jam jar by a hand machine for sealing 5. Check the vacuum formation in the jar 6. Perform can sealing by a can sealing machine 7. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Perform screwed on / pushed on / can sealing **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of screwed on, pushed on, and can sealing. • Importance • Types • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Screw caps, crown caps, push-on-jam jar, hand machine for sealing, can sealing machine	▪ Beware to maintain hygienic condition ▪ Check the vacuum formation in the jar ▪ Handle screw caps, crown caps, push-on-jam jar, hand machine for sealing, can sealing machine safely. ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 34: Perform heat sealing of plastic bags		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Take plastic bags to be sealed 3. Set a bar type impulse heat sealer 4. Set the plastic bag in the heat sealer 5. Operate the heat sealer 6. Seal plastic bags 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Perform heat sealing of plastic bags **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of sealing plastic bags with a heat sealer • Importance • Types • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Plastic bags, and bar type impulse heat sealer	▪ Beware to maintain hygienic condition ▪ Handle plastic bags and bar type impulse heat sealer safely. ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 35: Perform cooling of glass / metal containers		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Set cooler 3. Obtain glass and metal containers to be cooled 4. Set glass and metal containers in the sallow bath of the cooler 5. Arrange to chlorinate the cold water 6. Cool glass and metal containers by chlorinated cold water 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Perform cooling of glass / metal containers** **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of cooling for glass / metal containers • Importance • Types • Function of cooling regulator • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Cooler, glass and metal containers, cold water, chlorine	▪ Beware to maintain hygienic condition ▪ Handle cooler, glass and metal containers, cold water, and chlorine safely. ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 36: Packaging of fruit products		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Make ready the materials/tools/equipment 3. Perform fresh fruit packaging 4. Perform dry fruits packaging 5. Perform processed fruits packaging 6. Perform dry products packaging 7. Perform liquid products packaging 8. Perform liquid products packaging 9. Perform primary packaging 10. Perform secondary packaging 11. Perform hand packaging 12. Perform machine packaging 13. Take precautions 14. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Packaging of fruit products **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of packaging • Type and level of packaging • Importance of packaging • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Hand operated gluing machines and automatic labeling machines	▪ Beware to maintain hygienic condition ▪ Handle hand operated gluing machines and automatic labeling machines safely. ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 37: Perform labeling		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
15. Receive instruction 16. Obtain a small hand operated gluing machines 17. Obtain fruit products ready to be labeled 18. Set the hand operated gluing machines 19. Operate the hand operated gluing machines 20. Perform hand –labeling by the small hand operated gluing machines 21. Obtain automatic labeling machines 22. Set the automatic labeling machines 23. Obtain fruit products ready to be labeled 24. Operate the automatic labeling machines 25. Perform labeling by automatic labeling machines 26. Take precautions 27. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Perform labeling** **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of labeling • Importance of labeling • Type of labeling techniques • Information to be given in labeling • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Hand operated gluing machines and automatic labeling machines	▪ Beware to maintain hygienic condition ▪ Handle hand operated gluing machines and automatic labeling machines safely. ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 38: Perform storage of the labeled fruit products		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
Receive instruction Obtain wooden crates Prepare the wooden crates Obtain labeled cans / bottles to be stored Prepare labeled cans / bottles to store Pack the labeled cans / bottles in the wooden crates Seek a cool dry place Store the wooden crates packed with labeled cans / bottles in the cool dry place Take precautions Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Perform storage of the labeled fruit products** **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of storing fruit products • Type of storage as per nature and characteristics of products • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Wooden crates, labeled cans / bottles	▪ Beware to maintain hygienic condition ▪ Handle wooden crates, labeled cans and bottles safely. ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 39: Present products		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Determine the type of customers/ consumers intended to be served 3. Determine the share of market intended to be obtained 4. Make decisions on the size of the jars, packages, storage -life, labeling and advertisement 5. Take professional advice 6. Present products to the customers/ consumers accordingly 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Present products** **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of products presentation • Customer dealing • Market price and pricing • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Product show room, materials for advertisement etc.	▪ Beware to present products as per the market demands. ▪ Apply GMP (Good Manufactured Hygienic Practice) ▪	

Task 40 : Control quality of processed fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. List quality standard 3. Establish a quality control system 4. Check quality of workers hygiene 5. Check quality of plant cleanliness 6. Check quality of cleanliness of uniforms used 7. Check quality of cleanliness of utensils used 8. Carry out quality check at fruits selection 9. Carry out quality check at preliminary preparation of fruits 10. Carry out quality check at straining stage 11. Carry out quality check at the stage of adding minor ingredients 12. Carry out quality check at the stage of boiling / pasteurization 13. Carry out quality check at the stage of filling 14. Carry out quality check at the stage of packaging 15. Carry out quality check at the stage of producing final product 16. Take precautions 17. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Control quality of processed fruits** **Standard (How well):** As prescribed criteria	• Concept, principle, and procedure of quality control • Quality standard • Quality control system • Quality of workers hygiene • cleanliness • Status of cleanliness Plant, uniforms, utensils, raw fruits • Quality checking stages and criteria • Safety and precautions
Tools/materials/ equipment:	Safety/precautions:	
Refractometer, thermometer, pH meter etc.	▪ Beware to check quality at each stage of fruit processing to maintain the quality standards. ▪ Handle refractometer, thermometer, pH meter etc. safely. ▪ Apply GMP (Good Manufactured Hygienic Practice) ▪	

Module 2 Fruit processing

Sub module 1. Processing fresh fruits

Description: It deals with the knowledge and skills related to the processing of fresh and dried fruit products.

Objectives: After its completion the trainees will be able:

1. To process fresh fruit products
2. To process dried fruit products

Areas:

1. Processing fresh fruit products
2. Processing dried fruit products

Area: 1: Processing fresh fruit products

Description: It deals with the knowledge and skills related to the processing of fresh dried products. It consists of tasks related to the processing of fresh fruit products. Each task structure consists of steps, terminal performance objective, and minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner.

Objectives: After its completion the trainees will be able:

- Process different fruits to prepare juices, cordial, jam, marmalade, sauce, jelly, pickle, chutanies in hygiene condition
- Maintain prescribed quality of products

Tasks: To fulfill the objectives the trainees are expected to get proficiency on the following tasks:

1. Apply quality control measures
2. Process juice
3. Process clear juice
4. Process cordial
5. Process jam
6. Process marmalade
7. Process fruit sauce
8. Process jelly
9. Process pickle
10. Process fruit chatney

<table>
<tr><td colspan="2">Task 1: Apply quality control measures</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Identify quality control measures
3. Apply quality criteria for the selection of fruit
4. Apply quality parameter for preliminary preparation
5. Apply quality parameter for straining
6. Apply quality parameter for minor ingredients
7. Apply quality parameter for boiling / pasteurization:
8. Apply quality parameter for filling
9. Apply quality parameter for packaging
10. Apply quality parameter for producing final product
11. Take precautions
12. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Apply quality control measures
Standard (How well):
As prescribed criteria</td><td>• Concept and importance
• Criteria of fruit selection
• Criteria for cleanness
• Pasteurization
• Quantity/weight.
• Criteria for packaging
• Safety precaution</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td></td><td colspan="2">▪ Beware to apply quality control measures while selecting fruit, straining, adding other ingredients, boiling, pasteurizing, filling, packing / sealing /cooling, and producing final product.
▪ Apply GMP (Good Manufactured Hygienic Practice)</td></tr>
</table>

<table>
<tr><td colspan="2">Task 2: Process juice</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Enlist quality control measures
3. Apply quality control measures in each step
4. Select fruit
5. Prepare fruit
6. Pulp / extract juice
7. Perform sieving
8. Perform boiling
9. Perform pasteurization
10. Perform filling
11. Perform packing / sealing /cooling
12. Produce final juice product
13. Take precautions
14. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Process juice
Standard (How well):
As prescribed criteria</td><td>• Concept/definition
• Importance
• Hygiene and sanitation
• Safety precaution</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Fruit preparing, pulping/ extracting juice, sieving, boiling, pasteurizing, filling, and packaging / sealing /cooling containers/materials/tools/equipment/machines</td><td colspan="2">▪ Beware to apply quality control measures in each steps
▪ Handle containers, tools, materials, equipment/ machines safely
▪ Apply GMP (Good Manufactured Hygienic Practice)
▪</td></tr>
</table>

<table>
<tr><td colspan="2">Task 3: Process clear juice</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Enlist quality control measures
3. Apply quality control measures in each step
4. Select fruit
5. Prepare fruit
6. Pulp / extract juice
7. Perform sieving
8. Perform straining
9. Perform pasteurization
10. Perform filling
11. Perform packing / sealing /cooling
12. Produce clear juice
13. Take precautions
14. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Process clear juice
Standard (How well):
As prescribed criteria</td><td>• Concept/definition
• Importance
• Hygiene and sanitation
• Safety precaution</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Fruit preparing, pulping/ extracting juice, sieving, straining, pasteurizing, filling, and packaging / sealing /cooling containers/materials/tools/equipment/machines</td><td colspan="2">▪ Beware to apply quality control measures in each steps of processing clear juice
▪ Handle containers, tools, materials, equipment/ machines safely
▪ Apply GMP (Good Manufactured Hygienic Practice)</td></tr>
</table>

<table>
<tr><td colspan="2">Task 4: Process cordial</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Enlist quality control measures
3. Apply quality control measures in operation
4. Select fruit
5. Prepare fruit
6. Pulp / extract juice
7. Perform sieving
8. Perform straining
9. Add other ingredients
10. Perform pasteurization
11. Perform filling
12. Perform packing / sealing /cooling
13. Produce final cordial product
14. Take precautions
15. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Process cordial
Standard (How well):
As prescribed criteria</td><td>• Concept/definition
• Importance
• Hygiene and sanitation
• Safety precaution</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Fruit preparing, pulping/extracting juice, sieving, straining, adding ingredients, pasteurizing, filling, packaging , sealing, cooling containers/materials/tools/equipment/machines</td><td colspan="2">▪ Beware to apply quality control measures while selecting fruit, straining, adding other ingredients, pasteurizing, filling, packing / sealing /cooling, and producing final product.
▪ Handle containers, tools, materials, equipment/ machines safely
▪ Apply GMP (Good Manufactured Hygienic Practice)</td></tr>
</table>

Task 5: Process jam		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Enlist quality control measures 3. Apply quality control measures in each unit operation 4. Select fruit 5. Prepare fruit 6. Pulp / extract juice 7. Perform sieving 8. Perform straining 9. Add other ingredients 10. Perform boiling 11. Perform filling 12. Perform packing / sealing /cooling 13. Produce jam 14. Take precautions 15. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Process jam **Standard (How well):** As prescribed criteria	• Concept/definition • Importance • Hygiene and sanitation • Safety precaution
Tools/materials/ equipment:	Safety/precautions:	
Fruit preparing, pulping/extracting juice, sieving, straining, adding ingredients, boiling, filling, packaging , sealing, cooling containers/materials/tools/equipment/machines	▪ Beware to apply quality control measures while selecting fruit, straining, adding other ingredients, boiling, filling, packing / sealing /cooling, and producing final product. ▪ Handle containers, tools, materials, equipment/ machines safely ▪ Apply GMP (Good Manufactured Hygienic Practice) ▪	

Task 6: Process marmalade		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Enlist quality control measures 3. Apply quality control measures in each unit operation 4. Select fruit 5. Prepare fruit 6. Pulp / extract juice 7. Perform sieving 8. Perform straining 9. Add other ingredients 10. Perform boiling 11. Perform filling 12. Perform packing / sealing /cooling 13. Produce marmalade 14. Take precautions 15. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Process marmalade **Standard (How well):** As prescribed criteria	• Concept/definition • Importance • Hygiene and sanitation • Safety precaution
Tools/materials/ equipment:	Safety/precautions:	
Fruit preparing, pulping/extracting juice, sieving, straining, adding ingredients, boiling, filling, packaging , sealing, cooling containers/materials/tools/equipment/machines	▪ Beware to apply quality control measures in each steps ▪ Handle containers, tools, materials, equipment/ machines safely ▪ Apply GMP (Good Manufactured Hygienic Practice) ▪	

<table>
<tr><td colspan="2">Task 7: Process fruit sauce</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Enlist quality control measures
3. Apply quality control measures in each step
4. Select fruit
5. Prepare fruit
6. Pulp / extract juice
7. Perform sieving
8. Perform straining
9. Add other ingredients
10. Perform boiling
11. Perform filling
12. Perform packing / sealing /cooling
13. Produce final sauce product
14. Take precautions
15. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Process fruit sauce
Standard (How well):
As prescribed criteria</td><td>• Concept/definition
• Importance
• Hygiene and sanitation
• Safety precaution</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Fruit preparing, pulping/extracting juice, sieving, straining, adding ingredients, boiling, filling, packaging , sealing, cooling containers/materials/tools/equipment/machines</td><td colspan="2">▪ Beware to apply quality control measures in each steps
▪ Handle containers, tools, materials, equipment/ machines safely
▪ Apply GMP (Good Manufactured Hygienic Practice)
▪</td></tr>
</table>

Task 8: Process jelly		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Enlist quality control measures 3. Apply quality control measures in each step 4. Select fruit 5. Prepare fruit 6. Pulp / extract juice 7. Perform sieving 8. Perform straining 9. Add other ingredients 10. Perform boiling 11. Perform filling 12. Perform packing / sealing /cooling 13. Produce final jelly product 14. Take precautions 15. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Process jelly **Standard (How well):** As prescribed criteria	• Concept/definition • Importance • Hygiene and sanitation • Safety precaution
Tools/materials/ equipment:	Safety/precautions:	
Fruit preparing, pulping/extracting juice, sieving, straining, adding ingredients, boiling, filling, packaging , sealing, cooling containers/materials/tools/equipment/machines	▪ Beware to apply quality control measures in each steps ▪ Handle containers, tools, materials, equipment/ machines safely ▪ Apply GMP (Good Manufactured Hygienic Practice) ▪	

Task 9: Process pickle [whole fruit]		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Enlist quality control measures 3. Apply quality control measures in each unit operation 4. Select fruit 5. Prepare fruit 6. Add other ingredients 7. Perform boiling 8. Perform filling 9. Perform packing / sealing /cooling 10. Produce pickle 11. Take precautions 12. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Process pickle [whole fruit] **Standard (How well):** As prescribed criteria	• Concept/definition • Importance • Hygiene and sanitation • Safety precaution Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Fruit preparing, adding ingredients, boiling, filling, packaging , sealing, cooling containers/materials/tools/equipment/machines	▪ Beware to apply quality control measures in each steps ▪ Handle containers, tools, materials, equipment/ machines safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Task 10: Process fruit chatny		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
13. Receive instruction 14. Prepare recipe 15. Apply quality control measures in each unit operation 16. Prepare fruit 17. Add other ingredients 18. Perform filling 19. Perform packing / sealing /cooling 20. Produce chutny 21. Take precautions 22. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Process fruit chutanies **Standard (How well):** As prescribed criteria	• Concept/definition • Importance • Hygiene and sanitation • Safety precaution Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Fruit preparing, adding ingredients, boiling, filling, packaging , sealing, cooling containers/materials/tools/equipment/machines	▪ Beware to apply quality control measures in each steps ▪ Handle containers, tools, materials, equipment/ machines safely ▪ Apply GMP (Good Manufactured Hygienic Practice)	

Sub module 2. Processing dry fruits

Description: It deals with the knowledge and skills related to the processing of dried fruit products. It consists of tasks related to the processing of dried fruit products. Each task structure consists of steps, terminal performance objective, and minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner.

Objectives: After its completion the trainees will be able:

- Process chips
- Process dried fruits
- Process somatically dried fruits
- Process fruit leathers

Tasks: To fulfill the objectives the trainees are expected to get proficiency on the following tasks:

1. Process chips
2. Process dried fruits
3. Process somatically dried fruits
4. Process fruit leathers

<table>
<tr><td colspan="2">Task 1: Process banana chips</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Make ready the tools/materials
3. Apply quality control measures in each unit operation
4. Prepare fruit
5. Perform preliminary drying
6. Carry out deep frying
7. Perform packaging
8. Take precautions
9. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Process banana chips
Standard (How well):
As prescribed criteria</td><td>• Principles of processing chips
• Importance and uses of processing chips
• Quality control measures
• Fruits selection criteria
• Precautions to be taken</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Fruit preparing, preliminary drying, deep frying, and packaging containers/materials/tools/equipment/machines</td><td colspan="2">▪ Beware to apply quality control measures in each steps
▪ Handle containers, tools, materials, equipment/ machines safely
▪ Apply GMP (Good Manufactured Hygienic Practice)
▪</td></tr>
</table>

Task 2: Process solar/sun-dried fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Make ready the tools/materials 3. Apply quality control measures in each unit operation 4. Prepare fruit 5. Perform drying 6. Perform packaging 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Process solar/sun-dried fruits **Standard (How well):** As prescribed criteria	• Principles and uses of processing solar-dried fruits • Quality control measures • Fruits selection criteria • Precautions to be taken •
Tools/materials/ equipment:	Safety/precautions:	
Fruit preparation, drying, and packaging containers /materials/ tools/ equipment/machines	▪ Beware to apply quality control measures in each steps ▪ Handle containers, tools, materials, tools, equipment / machines safely ▪ Apply GMP (Good Manufactured Hygienic Practice) ▪	

Task 3: Process somatically dried fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Make ready the tools/materials 3. Apply quality control measures in each unit operation 4. Prepare fruit 5. Prepare sugar syrup 6. Soak fruit in syrup 7. Perform drying 8. Perform packaging 9. Take precautions 10. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Process somatically dried fruits **Standard (How well):** As prescribed criteria	• Principles of processing somatically dried fruits • Quality control measures • Fruits selection criteria • Precautions to be taken • Records keeping
Tools/materials/ equipment:	Safety/precautions:	
Fruit preparation, syrup preparation, soaking, drying, and packaging containers/materials/ tools/ equipment/machines	▪ Beware to apply quality control measures in each steps ▪ Handle containers, tools, materials, tools, equipment / machines safely ▪ Apply GMP (Good Manufactured Hygienic Practice) ▪	

Task 4: Process fruit leathers		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Make ready the tools/materials 3. Apply quality control measures in each unit operation 4. Prepare fruit 5. Pulp the fruit 6. Perform sieving 7. Add other ingredients/additives 8. Perform boiling 9. Perform pouring into thin sheets 10. Perform drying 11. Perform packaging 12. Take precautions 13. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Process fruit leathers **Standard (How well):** As prescribed criteria	• Principles of processing fruit leathers • Importance and use • Quality control measures • Fruits selection criteria • Precautions to be taken • Importance of records keeping
Tools/materials/ equipment:	Safety/precautions:	
Fruit preparation, pulping, sieving, adding ingredients, boiling, thin sheeting, drying, and packaging containers/materials/ tools/ equipment/machines	▪ Beware to apply quality control measures in each steps ▪ Handle containers, tools, materials, tools, equipment / machines safely ▪ Apply GMP (Good Manufactured Hygienic Practice) ▪	

Module 3. Bottling/canning of fruit products

Description: It deals with the knowledge and skills related to bottling and canning of fruits. It consists of tasks related to the bottling and canning of fruits. Each task structure consists of steps, terminal performance objective, and minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner.

Objectives: After its completion the trainees will be able:

- Perform general methods of bottling / canning of different common fruits

Tasks: To fulfill the objectives the trainees are expected to get proficiency on the following tasks:

1. Perform general methods for bottling / canning of fruits
2. Bottle / can Peach [Aaru]/Apricot [Khurpani]/Plum [Aaru bakhadas]/
3. Bottle / can Pear [Naspati]
4. Bottle / can Apple [Syau]
5. Bottle / can Spondias axillaries[Lapsi]
6. Bottle / can Litchi
7. Bottle / can mango [Aanp]
8. Bottle / can Pineapple [Bhueen katahatr]
9. Bottle / can Papaya [Mewa]

Task 1: Perform general methods for bottling / canning of fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select fruits 3. Sort fruits 4. Grade fruits 5. Wash fruits 6. Peel fruits by hand 7. Peel fruits by machine 8. Peel fruits by heat 9. Carry out lye peeling of fruits 10. Carry out filling 11. Prepare syrup 12. Perform syruping 13. Carry out exhausting 14. Carry out sealing 15. Carry out heat processing 16. Carry out cooling 17. Carry out labeling 18. Carry out packing 19. Carry out storing 20. Take precautions 21. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Perform general methods for bottling / canning of fruits** **Standard (How well):** As prescribed criteria	• Concept, need, and application of bottling / canning of fruits • Principles and procedures of bottling / canning of fruits • Fruits selection criteria • Sterilization and its important in canning • Importance of Cooling • Importance of exhausting • Importance of heat processing • Importance of sealing • Importance of Labeling • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Eye remover, peeling knife / machine, can opener / cork remover, core remover / corer / seed remover, cutting knife, pitting knife, puncher, containers, exhausting set, thermometer, can sealer, bottle sealer etc.	• Be careful to carry out the canning and bottling of fruits under most hygienic conditions. • Handle eye remover, peeling knife / machine, can opener / cork remover, core remover / corer / seed remover, cutting knife, pitting knife, puncher, containers, exhausting set, thermometer, can sealer, bottle sealer safely • Apply GMP (Good Manufactured Hygienic Practice)	

Task 2: Bottle /can Peach/Apricot/Plum		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select fruit 3. Cut into halves 4. Remove stone 5. Peel the cut halves by immersing them in boiling lye of 1-2 % strength for ½ - 1 minute 6. Wash away the loosened peel in water 7. Place them in cold water to prevent darkening 8. Fill in plain can 9. Maintain the strength of syrup 55^0 Brix 10. Exhaust the can at 180-212 ^{0}F (82-100^{0}C) for 7-10 minutes or until the temperature in the center of the can reaches at least 165^{0}F (74^{0}C) 11. Maintain processing (boiling) time 25 to 50 minutes as per the no of can(No.2,2 ½,10), pint jars, and quart jars used 12. Take precautions 13. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Bottle /can Peach/Apricot/Plum **Standard (How well):** As prescribed criteria	• Concept, principle, process and application of canning and bottling • Selecting criteria of fruits • Importance of canning • Time and temperature • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Cutting knife, pitting knife, containers, exhausting set, boiling set, thermometer, can sealer, bottle sealer, lye, water, plain can, sugar, etc.	• Be careful to carry out the canning and bottling of fruits under most hygienic conditions. • Handle related tools, materials, and equipment safely. • Apply GMP (Good Manufactured Hygienic Practice)	

Task 3: Bottle / can Pear [Naspati]		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Harvest pear when it attains full size but is still green 3. Ripen the fruit at 23-26^0 C 4. Peel the fruit from the stem-end to blossom-end 5. Cut longitudinally into two halves 6. Remove core with a double edged coring knife 7. Place the peeled and cored fruit in 1 to 2 percent common salt solution to prevent browning 8. Put the halved peeled and de-cored fruits in can 9. Cover with hot sugar syrup [strength of syrup 40^0 Brix] 10. Maintain the strength of syrup 55^0 Brix 11. Exhaust the can at 180-212 ^{0}F (82-100^{0}C) for 7-10 minutes or until the temperature in the center of the can reaches at least 165^{0}F (740C) 12. Maintain processing (boiling) time 25 to 60 minutes as per the no of can (N2,2 ½,10), pint jars, and quart jars used 13. Cool the cans thoroughly and promptly 14. Take precautions 15. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Bottle / can Pear [Naspati] **Standard (How well):** As prescribed criteria	• Concept, principle, process and application of canning and bottling • Selecting criteria of fruits • Importance of canning • Time and temperature • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Cutting knife, pitting knife, containers, exhausting set, boiling set, thermometer, can sealer, bottle sealer, lye, water, plain can, sugar, etc.	• Be careful to carry out the canning and bottling of fruits under most hygienic conditions. • Handle related tools, materials, and equipment safely. • Apply GMP (Good Manufactured Hygienic Practice)	

<table>
<tr><td colspan="2">Task 4: Bottle / can Apple [Syau]</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Select fruits
3. Wash fruits
4. Peel the fruits
5. Cut the fruits into slices
6. Prepare 2 to 3 percent salt solution
7. Dip the slices in 2 to 3 percent salt solution
8. Blanch them at 71^0 C to 82^{0}C for 3 to 4 minutes.
9. [Blanching is essential to remove oxygen from the tissues and thus prevent pin holding in the cans during storage.]
10. Put the blanched slices into cans.
11. Cover them with either hot water or sugar syrup.
12. Exhaust the cans.
13. Processed the cans
14. Follow other things as per methods for pear
15. Take precautions
16. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Bottle / can Apple [Syau]
Standard (How well):
As prescribed criteria</td><td>• Concept, principle, process and application of canning and bottling
• Selecting criteria of fruits
• Importance of canning
• Time and temperature
• Precautions to be taken
•</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Cutting knife, pitting knife, containers, exhausting set, boiling set, thermometer, can sealer, bottle sealer, lye, water, plain can, sugar, etc.</td><td colspan="2">• Blanching is essential to remove oxygen from the tissues and thus prevent pin holding in the cans during storage
• Be careful to carry out the canning and bottling of fruits under most hygienic conditions.
• Handle related tools, materials, and equipment safely.
• Apply GMP (Good Manufactured Hygienic Practice)</td></tr>
</table>

Task 5: Bottle / can Spondias axillaries[Lapsi]		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Harvest full size and yet green Lapsi. 3. Ripen the fruit by spreading in a room for a day or two. 4. Boil them in water until cracking of skin is observed. 5. Remove the skin with hand 6. Put the fruits with seed in a can and fill it with hot sugar syrup of heavy to medium brix (33 to 55^0) 7. Maintain strength of syrup 40^0 Brix 8. Exhaust the can at 180-212 ^{0}F (82-100^0C) for 7-10 minutes or until the temperature in the center of the can reaches at least 165^0F (740C) 9. Maintain processing (boiling) time 25 to 30 minutes as per the no of can (N2,2 ½,10), pint jars, and quart jars used 10. Take precautions 11. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Bottle / can Spondias axillaries[Lapsi] **Standard (How well):** As prescribed criteria	• Concept, principle, process and application of canning and bottling • Selecting criteria of fruits • Importance of canning • Time and temperature • Precautions to be taken •
Tools/materials/ equipment:	Safety/precautions:	
Cutting knife, pitting knife, containers, exhausting set, boiling set, thermometer, can sealer, bottle sealer, lye, water, plain can, sugar, etc.	• Be careful to carry out the canning and bottling of fruits under most hygienic conditions. • Handle related tools, materials, and equipment safely. • Apply GMP (Good Manufactured Hygienic Practice)	

Task 6: Bottle / can Litchi		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select the tree-ripened fruit. 3. Crack the outer shell of the fruit. 4. Separate the pulp inside the fruit. 5. Remove the stones 6. Maintain strength of syrup 40^0 Brix 7. Exhaust the can at 180-212 ^{0}F (82-100^0C) for 7-10 minutes or until the temperature in the center of the can reaches at least 165^0F (740C) 8. Maintain processing (boiling) time 25 to 30 minutes as per the no of can (N2,2 ½,10), pint jars, and quart jars used 9. Process the cans 10. Cool the cans thoroughly to prevent development of pink discoloration in the product. 11. Take precautions 12. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Bottle / can Litchi **Standard (How well):** As prescribed criteria	• Concept, principle, process and application of canning and bottling • Selecting criteria of fruits • Importance of canning • Time and temperature • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Cutting knife, pitting knife, containers, exhausting set, boiling set, thermometer, can sealer, bottle sealer, lye, water, plain can, sugar, etc.	• Be careful to carry out the canning and bottling of fruits under most hygienic conditions. • Handle related tools, materials, and equipment safely. • Apply GMP (Good Manufactured Hygienic Practice)	

Task 7: Bottle / can mango [Aanp]		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select mangoes, except juicy and fibrous varieties, which are canned successfully. 3. Pick firm ripe mangoes that are just developing color 4. Ripen the mangoes in straw. 5. Select ripe fruits daily from a lot as they ripen 6. Wash them in water 7. Peel them by hand 8. Cut the flesh into 6 to 8 longitudinal slices. 9. Take the cheeks or the two broad sides for canning as halves 10. Prepare 2 percent common salt solution 11. Place the slices in 2 percent common salt solution to prevent their enzymatic browning. 12. Add 0.3 to 0.5 percent citric acid to the syrup [as some varieties have a pH slightly higher than the critical pH of 4.5] for safe processing in an open cooker 13. Take precautions 14. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Bottle / can mango [Aanp] **Standard (How well):** As prescribed criteria	• Concept, principle, process and application of canning and bottling • Selecting criteria of fruits • Importance of canning • Time and temperature • Precautions to be taken •
Tools/materials/ equipment:	Safety/precautions:	
Cutting knife, pitting knife, containers, exhausting set, boiling set, thermometer, can sealer, bottle sealer, lye, water, plain can, sugar, etc.	• Be careful to carry out the canning and bottling of fruits under most hygienic conditions. • Handle related tools, materials, and equipment safely. • Apply GMP (Good Manufactured Hygienic Practice)	

Task 8: Bottle / can Pineapple [Bhueen katahatr]		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select pineapple fruits 3. Remove the crown by giving a sharp twist. 4. Peel the fruits 5. Remove the eyes of the fruits 6. Decor them 7. Cut them into transverse slices of 1.25 cm thickness with a stainless steel knife. 8. [Pineapples are sometimes cut into cubes and rings also]. 9. Carry out fillings 10. Carry out syruping with water or light syrup 11. Carry out exhausting of cans at 180-212 ^{0}F (82-100^{0}C) for 7-10 minutes or until the temperature in the center of the can reaches at least 165^{0}F (740C) 12. Carry out processing by maintaining processing (boiling) time 10 to 25 minutes as per the no of can (N2,2 ½,10), pint jars, and quart jars used 13. Take precautions 14. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Bottle / can Pineapple [Bhueen katahatr] **Standard (How well):** As prescribed criteria	• Concept, principle, process and application of canning and bottling Peach • Selecting criteria of fruits • Importance of canning • Time and temperature • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Cutting knife, pitting knife, containers, exhausting set, boiling set, thermometer, can sealer, bottle sealer, lye, water, plain can, sugar, etc.	• Be careful to carry out the canning and bottling of fruits under most hygienic conditions. • Handle related tools, materials, and equipment safely. • Apply GMP (Good Manufactured Hygienic Practice)	

Task 9: Bottle / can Papaya [Mewa]		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select fully developed ripe but firm papaya fruits with a good aroma for canning purpose. 3. Peel them 4. Remove seeds 5. Cut the flesh crosswise into pieces of 2.5 to 4 cm length or into cubes. 6. Prepare about 0.5 percent citric acid 7. Add the 0.5 percent citric acid to the syrup to reduce the pH of the fruit. 8. Can Papaya along with other fruits [like pineapple, mango, banana, etc] as a fruit cocktail 9. Take precautions 10. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Bottle / can Papaya [Mewa] **Standard (How well):** As prescribed criteria	• Concept, principle, process and application of canning and bottling Peach • Selecting criteria of fruits • Importance of canning • Time and temperature • Precautions to be taken •
Tools/materials/ equipment:	Safety/precautions:	
Cutting knife, pitting knife, containers, exhausting set, boiling set, thermometer, can sealer, bottle sealer, lye, water, plain can, sugar, etc.	• Be careful to carry out the canning and bottling of fruits under most hygienic conditions. • Handle related tools, materials, and equipment safely. • Apply GMP (Good Manufactured Hygienic Practice)	

Module 4. Processing of fruit products

Sub module 1. Fruit Jam, Jellies and Marmalades

Description: It deals with the knowledge and skills related to the preparation of jams, jellies and marmalades of different fruits. It consists of tasks related to the processing of jams, jellies and marmalades of different fruits. Each task structure consists of steps, terminal performance objective, and minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner.

Objectives: After its completion the trainees will be able:

- Prepare jams of different fruits [Pineapple/ Mango /Apple /Pear /apricot /Peach /Plum /Mixed fruit jam
- Prepare jellies of different fruits [guava, papaya, apple and jackfruit jellie]
- Prepare marmalade [orange marmalade]

Tasks: To fulfill the objectives the trainees are expected to get proficiency on the following tasks:

1. Prepare jams of different fruits [Pineapple/ Mango /Apple /Pear /apricot /Peach /Plum /Mixed fruit jam]
2. Prepare jellies of different fruits [guava, papaya, apple and jackfruit jellies]
3. Prepare marmalades [orange marmalades]

<table>
<tr><td colspan="3">Task: 1 : Prepare jams of different fruits[Pineapple/ Mango /Apple /Pear and apricot /Peach /Plum /Mixed fruit jam]</td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Classify fruits in terms of pectin
3. Enlist the amount of sugar and acid to be used
4. Enlist a typical recipes for making:
▪ Pineapple jam
▪ Mango jam
▪ Apple jam
▪ Pear/apricot jam
▪ Peach jam
▪ Plum jam
▪ Mixed fruit jam
5. Prepare jams of different fruits following the general method for preparing jams
6. Add essence (essences are not compulsory items. They can be reduced or increased as desired. Add extra pectin (to make the jam set nicely, extra pectin may be added. However, it varies from fruit to fruit)
7. Add permitted food color (it may be added. But it is also not compulsory.)
8. Take precautions
9. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Prepare jam of different fruits
Standard (How well):
As prescribed criteria</td><td>• Definition, concept and principles for jam making.
• Importance of jam
• Type of jam
• Fruits for jam making
• Definition and type of color and essences.
• Precautions to be taken</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:
Apply GMP (Good Manufactured Hygienic Practice)</td></tr>
</table>

Task: 2 : Prepare jellies of different fruits[guava, papaya, apple and jackfruit jellies]		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select fruits containing high pectin content. 3. List the amount of water needed and time requirement for extraction of pectin. 4. Extract pectin 5. Subject it to a test of strength of pectin 6. List recipe 7. Follow the general method for preparing jam 8. Add sugar depending on the strength of extracted pectin 9. Add citric acid at the rate of 5 -10 gm. per kg of fruit pulp 10. Prepare jellies of different fruits based on the recipes 11. Take precautions 12. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Prepare jellies of different fruits **Standard (How well):** As prescribed criteria	• Definition, concept and principles of jellies making. • Importance and application of jellies • Selection criteria of fruits. • Recipe for jellies making • Precautions to be taken • Keeping records
Tools/materials/ equipment:	Safety/precautions: Apply GMP (Good Manufactured Hygienic Practice)	

Task: 3 : Prepare marmalades		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select / obtain orange for making jellies 3. Extract pectin (as already descried) 4. Mix sugar, citric acid etc. as per the typical recipe for jelly 5. Prepare orange peels: 6. Cut peels of oranges into fine shreds 7. Boil it in sufficient water for about 10 minutes. 8. Change the water 2 to 3 times. 9. Remove the inner white portion which is attached to the yellow peel (flavor)[the yellow peel which has been boiled and washed is now ready for incorporation] 10. Add the orange peels to the boiling jelly 10 -15 minutes before the end point. 11. Follow other process as described in the general method of making jams and jellies 12. Take precautions 13. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Prepare marmalades **Standard (How well):** As prescribed criteria	▪ Definition, concept and principles ▪ Application of marmalades ▪ Difference between jam, jellies, and marmalades • Recipe for making marmalades • Selection criteria of fruits for making jellies • Precautions to be taken • Keeping records
Tools/materials/ equipment:	Safety/precautions: Apply GMP (Good Manufactured Hygienic Practice)	

Sub module 2. Fruit preserves/candies

Description: It deals with the knowledge and skills related to the processing of fruit preserves and candies. It consists of tasks related to the processing of fruit preserves and candies. Each task structure consists of steps, terminal performance objective, and minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner.

Objectives: After its completion the trainees will be able:

- To preserve different fruits
- To prepare candy of different fruits

Tasks: To fulfill the objectives the trainees are expected to get proficiency on the following tasks:

1. Make Apple preserve
2. Make Amala preserve
3. Make Lapsi preserve
4. Make mango preserve
5. Make pumpkin preserve
6. Make citrus peel candy
7. Make pomelo peel candy
8. Make pineapple preserve
9. Make papaya preserve

<table>
<tr><td colspan="2">Task 1 : Make Apple preserve</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Prepare tools/materials
3. Deep the apples in dilute lime for 24 hours
4. Transfer the apples to 2 or 3 % alum solution
1. Add a small quantity of potassium metabisulphite to the whiten the color of the apple
2. Boil it till the fruits become soft.
5. Carry out sugar addition and intermittent boiling
6. Add the sugar to the boiled fruit in alternate layers and let it stand for 24 hours.
7. Acidify the syrup by adding citric acid and boil it
8. Boil the mixture again for 4 to 5 minutes and let it stand for 3-4 days
9. Carry out filling and sealing
10. Label and store the product
11. Take precautions
12. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Make apple preserve
Standard (How well):
As prescribed criteria</td><td>• Concept, principles, procedures, and application of making apple preserves
• Criteria of fruit selection
• Quality checking criteria
• Ingredients and their ratio/quantity
• Time table of the process
• Boiling temperature
• Precautions to be taken</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Peeling knife / machine, stainless steel needle / fork, can opener / cork remover, containers, thermometer, sealer, water, salt, lime water, alum solution, sodium bisulphate, sugar, citric acid, containers, label etc.</td><td colspan="2">• Be careful to carry out processing of fruit preserves under most hygienic conditions.
• Handle sealer Peeling knife / machine, stainless steel needle / fork, can opener / cork remover, containers, thermometer, sealer, water, salt, lime water, alum solution, sodium bisulphate, sugar, citric acid, containers, label etc. safely</td></tr>
</table>

<table>
<tr><td colspan="2">Task 2 : Make Amla preserve</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Select large Amla fruits
3. Wash the selected Amla fruits thoroughly in water
4. Prick the washed Amla fruits with a bamboo / wood needle [never ever use iron needle for pricking]
5. Place the pricked Amla fruits in 2 % - 8%) common salt solution
6. Take out the Amla fruits
7. Wash them
8. Keep them in a freshly prepared 8 % salt solution for a week to remove the astringent taste of Amla
9. Wash the fruits again
10. Blanch the fruits in 2 % alum solution till they become sufficiently soft
11. Take out the softened fruits [Discard the boiling solution of alum]
12. Put the soften fruits in cold water
13. Cool the softened fruits [The cool fruits are ready for the syrup treatment]
14. Pass the cooled softened fruits through several stages of syruping
15. Take precautions
16. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Make Amla preserve
Standard (How well):
As prescribed criteria</td><td>• Concept, principles and application of making Amla preserves
• Ingredients for Amala preservation.
• Taking precautions</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Peeling knife / machine, stainless steel needle / fork, can opener / cork remover, containers, thermometer, sealer, water, salt, lime water, alum solution, sodium bisulphate, sugar, citric acid, containers, label etc.</td><td colspan="2">• Be careful to carry out processing of fruit preserves under most hygienic conditions.
• Handle sealer Peeling knife / machine, stainless steel needle / fork, can opener / cork remover, containers, thermometer, sealer, water, salt, lime water, alum solution, sodium bisulphate, sugar, citric acid, containers, label etc. safely</td></tr>
</table>

<table>
<tr><td colspan="2">Task 3 : Make Lapsi preserve</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Select ripe but firm Lapsi fruits
3. Never use soft ripe Lapsi fruits
4. Wash the selected Lapsi fruits thoroughly
5. Boil the washed Lapsi fruits in water for a few minutes to soften their skins
6. Peel the boiled Lapsi fruits manually [Peeled Lapsi fruits along with seeds are now ready for syruping and boiling]
7. Pass the peeled Lapsi fruits along with seeds through several stages of syruping
8. Take precautions
9. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Make Lapsi preserve.
Standard (How well):
As prescribed criteria</td><td>• Concept, principles, procedures, and application of making Lapsi preserves
• Use and importance
• Selection criteria of Lapsi fruits
• Ingredients and quantity
• Taking precautions</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Peeling knife / machine, stainless steel needle / fork, can opener / cork remover, containers, thermometer, sealer, water, salt, lime water, alum solution, sodium bisulphate, sugar, citric acid, containers, label etc.</td><td colspan="2">• Be careful to carry out processing of fruit preserves under most hygienic conditions.
• Handle sealer Peeling knife / machine, stainless steel needle / fork, can opener / cork remover, containers, thermometer, sealer, water, salt, lime water, alum solution, sodium bisulphate, sugar, citric acid, containers, label etc. safely</td></tr>
</table>

<table>
<tr><td colspan="2">Task 4 : Make Mango preserve</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Prepare tools/materials/equipments
3. Prepare mango for preserve by cutting longitudinal large pieces
4. Boil the slices in water until they become tender
5. Cool the slices
6. Prick the slices with a stainless steel needle / fork
7. Pass the slices of mango fruit through several stages of syruping and boiling
8. Take precautions
9. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Make Mango preserve
Standard (How well):
As prescribed criteria</td><td>Making Mango preserve:
• Concept, principles, procedures, and application of making Mango preserves
• Selection criteria of fruits
• Ingredients and their requirement
• Taking precautions
• Keeping records</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Peeling knife / machine, stainless steel needle / fork, can opener / cork remover, containers, thermometer, sealer, water, salt, lime water, alum solution, sodium bisulphate, sugar, citric acid, containers, label etc.</td><td colspan="2">• Be careful to carry out processing of fruit preserves under most hygienic conditions.
• Handle sealer Peeling knife / machine, stainless steel needle / fork, can opener / cork remover, containers, thermometer, sealer, water, salt, lime water, alum solution, sodium bisulphate, sugar, citric acid, containers, label etc. safely</td></tr>
</table>

<table>
<tr><td colspan="2">Task 5 : Make pumpkin preserve / candy (Petha)</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Make ready the tools/materials/equipments
3. Prepare pumpkin by washing and cutting longitudinally into fairly large size pieces.
4. Remove the fluffy portion from inside of the slices
5. Peel each slices separately
6. Soak the peeled slices in lime water diluted three times with water for about 30 minutes
7. Prick the slices with a stainless steel needle / fork / pointed bamboo pricks
8. Cut the pricked pieces into suitable size
9. Put again the cut pieces in lime water overnight
10. Take out the pieces from the lime water next day.
11. Boil the pieces in 0.5 -1 % CaCl2 till they become tender / soft
12. Add a pinch of Potassium Metabisulphite while boiling alum if perfectly white pieces are desired
13. Drain off the alum water
14. Wash the tender slices in running cold water
15. Dry the syrup while it is still hot
16. Roll the dried pieces in finely powdered sugar
17. Dry them on trays at room temperature [candied petha is then ready]
18. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Make pumpkin preserve / candy (Petha)
Standard (How well):
As prescribed criteria</td><td>• Concept, principles, procedures, and application of making Pumpkin preserves/ candies
• Scope and importance
• Selection criteria
• Critical steps like
▪ soaking in lime water
▪ Boiling in 2-3 % alum
▪ Addition of sodium sulphite
▪ Draining off the alum water
▪ Drying the syrup
▪ Rolling in powdered sugar
• Drying temperature
• Taking precautions
• Keeping records</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Peeling knife / machine, stainless steel needle / fork, can opener / cork remover, containers, thermometer, sealer, water, salt, lime water, alum solution, sodium bisulphate, sugar, citric acid, containers, label etc.</td><td colspan="2">• Be careful to carry out processing of fruit preserves/candies under most hygienic conditions.
• Handle sealer Peeling knife / machine, stainless steel needle / fork, can opener / cork remover, containers, thermometer, sealer, water, salt, lime water, alum solution, sodium bisulphate, sugar, citric acid, containers, label etc. safely</td></tr>
</table>

Task 6 : Make citrus peel candy		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Make ready the tools/materials/equipment 3. Prepare fruits 4. Boil for 10 minutes in 1% Citric Acid solution 5. Change water two times 6. Put the peels with cold syrup of 30 degree brix and left for 48 hours 7. Raise the brix by 10 degree 8. Boil the peels for 5 minutes 9. Repeat the process until the brix reaches 60 degrees 10. Add citric acid @ 1.25/kg peels 11. Raise the strength of syrup to 75 degree brix by raising 5 degree energy succeeding day 12. Left the peels in the syrup for 2 to 3 weeks and take them from syrup 13. Dry them Solar cabinate dryers 50 ± C 14. Spring with icing sugar powder 15. 16. Package in a suitable packaging materials 17. Take precautions 18. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Make citrus peel candy** **Standard (How well):** As prescribed criteria	• Concept, principles, procedures, and application of making Citrus peel candy • Importance and scope • Selection criteria • Ingredients and quantity • Critical steps and time interval • temperature requirement and time • Taking precautions • Keeping records
Tools/materials/ equipment:	Safety/precautions:	
Peeling knife / machine, stainless steel needle / fork, can opener / cork remover, containers, thermometer, sealer, water, salt, lime water, alum solution, sodium bisulphate, sugar, citric acid, containers, label etc. Hand reflactometer	• Be careful to carry out processing of fruit candies under most hygienic conditions. • Handle sealer Peeling knife / machine, stainless steel needle / fork, can opener / cork remover, containers, thermometer, sealer, water, salt, lime water, alum solution, sodium bisulphate, sugar, citric acid, containers, label etc. safely	

<table>
<tr><td colspan="2">Task 7 : Make pineapple preserves /candy</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Prepare tools/materials/ equipment.
3. Prepare pineapple slice and prick the slices on both sides.
4. Put fruit in syrup of 30 degree brix containing 0.1 % citric acid
5. Boil it for 10 minutes
6. Raise the strength of syrup by 5 degree brix daily until it reaches 70 degree brix
7. Left the fruit in syrup as such for 10 days.
8. Conserve it to candy [if it is to be candied).
9. Raise the brix to 75 degree
10. Keep the fruit in the syrup for another 10 days
11. Roll the pieces in finely powdered sugar
12. Dry them on trays at room temperature [the candy is then ready]
13. Take precautions
14. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Make pineapple preserves /candy
Standard (How well):
As prescribed criteria</td><td>• Concept, principles, procedures, and application of making Pineapple
• Scope and importance
• Required chemicals, quantity/ ratio and their functions
• Boiling time and temperature.
• Resting time, duration and interval
• Taking precautions
• Keeping records</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Peeling knife / machine, stainless steel needle / fork, can opener / cork remover, containers, thermometer, sealer, water, salt, lime water, alum solution, sodium bisulphate, sugar, citric acid, containers, label etc.</td><td colspan="2">• Be careful to carry out processing of fruit preserves/candies under most hygienic conditions.
• Handle sealer Peeling knife / machine, stainless steel needle / fork, can opener / cork remover, containers, thermometer, sealer, water, salt, lime water, alum solution, sodium bisulphate, sugar, citric acid, containers, label etc. safely</td></tr>
</table>

Sub module 3. Fruit Chutanies, Sauces and Pickles

Description: It deals with the knowledge and skills related to the processing of fruit Chatneys, sauces, and pickles. It consists of tasks related to the processing of fruit Chatneys, sauces, and pickles. Each task structure consists of steps, terminal performance objective, and minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner.

Objectives: After its completion the trainees will be able:

- To prepare Chatneys from different common fruits

Tasks: To fulfill the objectives the trainees are expected to get proficiency on the following tasks:

1. Perform general method of making Chatneys
2. Prepare apple Chatney
3. Prepare sweet mango Chatney
4. Prepare sliced mango Chatney
5. Prepare plum Chatney
6. Prepare apple sauce
7. Prepare mango pickle
8. Prepare lime and chilies pickle

<table>
<tr><td colspan="2">Task: 1 : Perform general method of making Chatneys</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Select fruits for making Chatneys
3. Wash the selected fruits
4. Cut the washed fruits into desirable size
5. Boil the cut pieces in water to soften (if necessary)
6. Drain the water
7. Add onion/garlic/salt/sugar
8. Cook in low flame
9. Add vinegar and spices just a little before the final stage of boiling [should be coked to the consistency of jam]
10. Fill in the sterilized bottles while hot
11. Seal the bottles
12. Cool the bottles
13. Store the bottles
14. Never ever use iron and copper vessels for making Chatney as they are acted upon by vinegar
15. Take precautions
16. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Perform general method of making Chatneys
Standard (How well):
As prescribed criteria</td><td>• Concept, principles, procedures, and application of making Chatneys
• Recipe for Chatneys
• Taking precautions</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
</table>

Task 2 : Prepare apple chatny		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain a typical recipe for apple Chatney 3. Select fruits for making Chatneys 4. Wash the selected fruits 5. Follow the general method of making Chatneys 6. Modify recipe by increasing / decreasing certain spices as per the taste 7. Add apple essence just to enhance the flavor	**Condition (Given):** As assigned by supervisor **Task (What):** **Prepare apple Chatney** **Standard (How well):** As prescribed criteria	• Concept, principles, procedures, and application of making Chatneys • Recipe for Chatneys • Taking precautions
Tools/materials/ equipment:	Safety/precautions:	

Task 3 : Prepare sweet mango chatny		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain a typical recipe for sweet mango Chatney 3. Select slightly under-ripe mangos 4. Wash the selected fruits 5. Peel the selected mangos 6. Cut into thin slices 7. Soften the slices by heating them in a small amount of water 8. Add sugar / salt 9. Tie loosely the other ingredients in a cloth bag 10. Place the bag with the slices in a boiling pan 11. Cook it until the mass attains the consistency of jam 12. Add the vinegar 13. Cook it for another 5 minutes 14. Remove the spice bag 15. Fill the hot Chatney into a sterilized hot and dry bottle 16. Seal the product immediately 17. Keep the sealed product in a cool and dry place 18. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Prepare sweet mango Chatney **Standard (How well):** As prescribed criteria	• Concept, principles, procedures, and application of making Chatneys • Recipe for Chatneys • Taking precautions
Tools/materials/ equipment:	Safety/precautions:	

Task 4 : Prepare sliced mango Chatney		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain a typical recipe for sliced mango Chatney 3. Select slightly under-ripe mangos 4. Wash the selected fruits 5. Peel the selected mangos 6. Cut into thin slices 7. Follow the method of its preparation as for the sweet mango Chatney 8. Take precautions 9. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Prepare sliced mango Chatney **Standard (How well):** As prescribed criteria	• Concept, principles, procedures, and application of making Chatneys • Recipe for Chatneys • Taking precautions
Tools/materials/ equipment:	Safety/precautions:	

Task 5 : Prepare plum Chatney		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain a typical recipe for sliced mango Chatney 3. Select slightly under-ripe mangos 4. Wash the selected fruits 5. Follow the method of its preparation as for making mango / apple Chatney 6. Take precautions 7. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Prepare plum Chatney. **Standard (How well):** As prescribed criteria	• Concept, principles, procedures, and application of making Chatneys • Recipe for Chatneys • Taking precautions
Tools/materials/ equipment:	Safety/precautions:	

Task 6 : Prepare apple sauce		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain recipe for apple sauce 3. Follow the methods for preparing Chatneys 4. Maintain following criteria or conditions for making sauce: ▪ Maintain at least 1 % acidity acid to ensure its keeping quality ▪ Use vinegar or glacial acetic acid 5. Take precautions 6. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Prepare apple sauce **Standard (How well):** As prescribed criteria	• Concept, principles, procedures, and application of making Chatneys • Recipe for Chatneys • Taking precautions
Tools/materials/ equipment:	Safety/precautions:	
	Apply GMP and GHP	

Task 7 : Prepare Mango pickle		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain recipe for mango pickle 3. Select fully developed but under-ripe mango of a little sour variety 4. Wash the selected fruit 5. Cut the washed fruit longitudinally with a stainless steel knife 6. Discard the stone 7. Prepare a 2 to 3 % salt solution 8. Put the slices immediately in the salt solution to prevent blackening of the cut surface 9. Mix the slices with common salt powder 10. Put the salted mango slices in glass jars 11. Keep them in the sun for 4 to 5 days or till the slices turn pale yellow 12. Mix the spices as indicated in the recipe to the pale yellow slices 13. Smear the slices with a little mustard oil 14. Pack the slices in glass / jar 15. Cover with a thin layer of mustard oil 16. Leave it for 2-3 weeks 17. [The pickle will be ready in 2-3 weeks] 18. Take precautions 19. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Prepare Mango pickle** **Standard (How well):** As prescribed criteria	• Concept, principles, procedures, and application of making Chatneys • Recipe for Chatneys • Taking precautions
Tools/materials/ equipment:	Safety/precautions:	

Task 8 : Prepare lime and chilies pickle		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select fully matured and juicy limes with deep yellow skin 3. Keep greenish lime as such for a few days to develop a deep yellow color 4. Select green chilies of good size 5. Wash lime and chilies thoroughly in cold water 6. Remove the stalks of green chilies without injuring their caps 7. Cut the limes into halves or quarters depending upon their size 8. Add salt in layers (@ 1 kg of powered salt for every 4 kg of limes and chilies) and fill in clean and dry jars 9. Cover the salted limes and chilies with lime juice by squeezing some fresh limes 10. Keep the jar in sun for about a week 11. (In this process the lime becomes soft and the skin turns brown: the green color of chilies turns brown. At this stage the pickle is ready for use) 12. Cover the top surface with a thin layer of mustard oil to keep off the moisture from the pickle 13. Alter the proportion of chilly and lime according to the taste. 14. Take precautions 15. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Prepare lime and chilies pickle** **Standard (How well):** As prescribed criteria	• Concept, principles, procedures, and application of making Chatneys • Recipe for Chatneys • Taking precautions
Tools/materials/ equipment:	Safety/precautions:	

Sub module 4. Natural Fruit Juices, Squashes

Description: It deals with the knowledge and skills related to the processing of fruit juice and squashes. It consists of tasks related to the processing of fruit juice and squashes. Each task structure consists of steps, terminal performance objective, and minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner.

Objectives: After its completion the trainees will be able:

- To prepare juice by different common fruits
- To prepare squash by different common fruits
- To prepare lime juice cordial
- To prepare squash of different fruits

Tasks: To fulfill the objectives the trainees are expected to get proficiency on the following tasks:

1. Prepare apple juice
2. Pasteurize by overflow method
3. Prepare orange juice
4. Prepare pineapple juice
5. Prepare orange squash
6. Prepare lemon squash
7. Prepare lime juice cordial
8. Prepare pineapple squash
9. Prepare mango squash

Task 1 : Prepare apple juice		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Wash apples with weak solution of hydrochloric acid [50 ml acid in 1 liter water] to remove any arsenic and lead spray residues 3. Crush them in an small pieses 4. Place the pieces in a basket press 5. Press the pieces to get the juice 6. Collect the juice in a non-corrodible vessel 7. Use aluminum vessels for small – scale production [Never use iron or copper containers.] 8. Strain the juice through coarse cloth to remove fruit tissues etc. 9. Heat the filtered juice to 82 to 85^{0}C and fill hot into previously cleaned colored bottles, 10. Pasteurize* by the overflow method for 30 minutes at 82 ^{0} C. (92 ^{0} C for 1 minutes keep to settle and separate upper clear layer) 11. Close the bottles immediately using crow corks 12. Wash the inner part of the crow corks (like the cover of soft drinks and beers) with alcohol before using. 13. Seal the bottles of juice 14. Cool the sealed bottles of juice immediately using cold water 15. Wipe bottles dry 16. Label the product 17. Keep in a cool dry place 18. Take precautions 19. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Prepare apple juice** **Standard (How well):** As prescribed criteria	• Concept, principles, procedures, and application of making Apple juice • Cleaning agents • Using aluminum vessels for small – scale production [Never use iron or copper containers.] • Heating the filtered juice to 82 to 85^{0}C and fill hot into previously cleaned colored bottles, • Pasteurizing* by the overflow method for 30 minutes at 79 ^{0} C: • Sealing the bottles of juice • Taking precautions
Tools/materials/ equipment:	Safety/precautions:	
	Apply GMP and GHP	

Task 2 : Pasteurize by overflow method*		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Heat the juice to a temperature about 2.5 higher than the pasteurization temperature 3. Fill the juice into hot sterilized bottles up to the brim, taking care to see that during filling and sealing, the temperature of the juice does not fall below the pasteurization temperature. [The bottles should be hot at the time of filling to safeguard against a fall in temperature of the juice and to prevent breakage of bottles.] 4. Pasteurize the sealed bottles at a temperature of 2.5 lower than the filling and sealing temperature (for example for apple juice it is filled at 82^0C and pasteurized at 82^0C. 5. Cool the bottles after pasteurization [Upon cooling, the juice contracts leaving a small head space which does not contain any air] (Various juices such as apple, grapes, pineapples etc. can be preserved using this method.) 6. Take precautions 7. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Pasteurize by overflow method** **Standard (How well):** As prescribed criteria	• Concept, principles, procedures, and application of pasteurization by overflow method • Heat and time requirement • Taking precautions • Keeping records
Tools/materials/ equipment:	Safety/precautions:	
	Apply GMP and GHP	

Task 3 : Prepare orange juice		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select the oranges which are fully ripe and of full season for extracting juice 3. Extract juice 4. Reduce bitterness in the juice by extracting the juice from the segment dipped in 2 percent boiling alkali (sodium hydroxide) for 30 to 60 seconds to remove the outer cover covering of the segments and the fibrous materials, which cause bitterness in the juice when juice is extracted from the segments in a screw type juice extractor 5. Pasteurize the juice with juice pasteurizer 6. Take precautions 7. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Prepare orange juice **Standard (How well):** As prescribed criteria	• Concept, principles, procedures, and application of making orange juice • Scope and importance • Type of juice/classification and grading criteria • Selection criteria of fruits • Concept and needs of Pasteurization. • Taking precautions • Keeping records
Tools/materials/ equipment:	Safety/precautions:	
	Apply GMP and GHP	

Task 4 : Prepare pineapple juice		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select / obtain the fruits 3. Wash the fruits 4. De-crown the fruits with a sharp twist 5. Peel the fruits with a stainless steel knife 6. Remove the eyes using a sharp V-shaped stainless steel knife 7. Discard the damaged portions 8. Cut the sound portion into pieces 9. Pass them through a pulper or juice extractor 10. Wrap the prepared fruit in a thick cloth 11. Press out the juice using a small basket press. 12. Filter the juice through a muslin cloth. 13. Treat the juice thus obtained with sugar by adding a little sugar (@ 60 g per kg) 14. Strain again 15. Heat the prepared juice rapidly to 82 – 85 ^{0}C 16. Pour it hot into plain cans leaving 0.6 cm head space. 17. Seal it immediately and 18. Process it in boiling water as for canning of pineapple chunks 19. Follow the overflow method for filling in bottles 20. Take precautions 21. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Prepare pineapple juice **Standard (How well):** As prescribed criteria	• Concept, need, principle/procedures of preparing and application of pineapple juice • Pineapple juice is usually prepared as a by- product in the canning of pineapple pieces. Entire fruits or even scrapings and cores can be used for the extraction of the juice. • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
	• Be careful to carry out the wine making process under most hygienic conditions.	

Task 5 : Prepare orange squash		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Select / obtain fully ripe oranges 2. Prepare fruits by wash, Peel, Remove the fibrous rag, 3. Pass the segments through a screw – type juice extractor. 4. Mix sugar , citric acid and water in correct proportions 5. Perform heating. 6. Cool the syrup slightly 7. Filter it through cloth. 8. Blend the clean syrup with the juice 9. Add peel emulsion or orange essence, edible food grade colors 10. Add the filtrate (color solution) as required. 11. Add preservative 12. Fill the squash. 13. Close the bottles using a bottle sealer. 14. Wash the sealed bottles 15. Dry the sealed bottles 16. label the sealed bottles 17. Take precautions 18. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Prepare orange squash **Standard (How well):** As prescribed criteria	• Concept, need, principle, procedures of preparing and application of orange squash • Types of squashes which have a potential market are orange, lemon, pineapple and mongo • Recipe- presented is based on 10 kg juice, this can be changed on the basis of the amount of juice thorough calculation
Tools/materials/ equipment:	Safety/precautions:	

Note

Recipe		
Ingredients	25% Juice 45^0 Brix 1.5% Acidity	33 1/ 3% Juice 45^0 Brix 1.5 % Acidity
Orange Juice , 10^0 Brix, 0.8 % acidity	10 kg	10 kg
Sugar	16.5 kg	12.1 kg
Citric acid	100 g	350 g
Water	13 lit.	7.5 lit.
Orange essence and color	As required	As required
Preservative (KMS)	25 g	18 g

Task 6 : Prepare lemon squash		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select the fruits 3. Clean the fruits 4. Half the fruits 5. Extract juice 6. Filter the extracted juice through cloth 7. obtain the clear lemon juice(the clear juice is now ready to make into squash) 8. Follow the remaining steps as for orange squash. 9. Take precautions 10. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Prepare lemon squash **Standard (How well):** As prescribed criteria	• Concept, principle, procedures, and application of preparing lemon squash • Different kinds of citrus fruits like lemon, lime, citron etc. can be mixed to prepare lemon squash. • Selecting , cleaning , and halving the fruits • Recipe • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
	• Be careful to carry out the wine making process under most hygienic conditions.	

Note: Recipe

Ingredients	25% Juice 45^0Brix 1.5% Acidity	33 1/ 3% Juice 45^0Briix 1.5 % Acidity
Juice , 10^0 Brix, 5% acidity	10 kg	10 kg
Sugar	17 kg	12.5 kg
Citric acid	100 g	-
Water	13 lit.	7.5 lit.
Lemon essence and color	As required	As required
Preservative (KMS)	25 g	18 g

Task 7 : Prepare lime juice cordial		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Preserve Lime juice [which is stored in large carboys (plastic containers)] by adding KMS at the rate of 62 g per 50 kg of juice. 3. Settle juices gradually [the sediment forms a compact layer at the bottom, leaving a clear juice at the top.] 4. Leave it for 2 to 3 months 5. Make cordial from the clear juice thus obtained following the method already described 6. Take precautions 7. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Prepare lime juice cordial** **Standard (How well):** As prescribed criteria	• Concept, principle, procedures, and application of preparing lime juice cordial • Scope and importance • Preserving Lime juice [which is stored in large carboys (plastic containers)] by adding KMS at the rate of 62 g per 50 kg of juice. • Recipe: • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
	• Be careful to carry out the wine making process under most hygienic conditions.	

Note /Recipe

Ingredients	15% juice 35 ^{0} Brix 1.5 % acidity	33 1/3 juice 35^{0} Brix 2.0% acidity
Clarified lime juice 10^{0} Brix , 6 % acidity	10 kg	10 kg
Sugar	13 kg	9.5 kg
Water	17 lit.	10.5 lit.
color	as required	as required
Preservative (KMS)	25 g	18 g

Task 8 : Prepare pineapple squash		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select the fruits • Obtain the undersized pieces / rejects of pineapple • Use the undersized pieces / rejects of pineapple for squash making [as it is profitable] • Select fruits 3. Slice the fruit 4. Remove the outer skin using a curved knife 5. Core the peeled slices 6. Cut them into small pieces 7. Pass them through a screw – type crusher and extractor. 8. Press the juice from the crushed material in a basket press. 9. Use the clear juice in the preparation of squash. 10. Follow the remaining steps are the same as for orange squash. 11. Take precautions 12. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Prepare pineapple squash** **Standard (How well):** As prescribed criteria	• Concept, principle, procedures, and application of preparing pineapple squash • Scope and importance • Recipe • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
	• Be careful to carry out the wine making process under most hygienic conditions.	

Recipe

Ingredients	25 % juice 45^0 brix 1. 5 % acidity	33 1/ 3 % Juice 45 % Brix 1. 5 % acidity
Pineapple juice , 8^0 Brix 0.5 % acidity	10 kg	10 kg
Sugar	16. 75 kg	12. 25 kg
Water	12.5 lit.	7 lit.
Citric acid	500 g	400g
Pineapple flavor and color	as required	as required
Preservative (KMS)	25 g	18 g

Task 9 : Prepare mango squash		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select juicy varieties of mangoes for making mango squash. 3. Take fully ripe mango 4. Wash the fully ripe mango well. 5. Cut off the stem portion 6. Give four vertical slits to each fruit to facilitate pulping. 7. Pass the fruits through a pulping machine to separate the skin and the stones[if the machine is available] 8. Separate the skin manually 9. Remove the seeds 10. Pass the pieces through a hand pulper. 11. Use the fine smooth pulp for making the squash. 12. Take precautions 13. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Prepare mango squash** **Standard (How well):** As prescribed criteria	• Concept, principle, procedures, and application of preparing Mango squash • Scope and importance • Recipe: • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
	• Be careful to carry out the wine making process under most hygienic conditions.	

Recipe:

Ingredients	25 % juice 45^0 brix 0. 8 % acidity	33 1/ 3 % Juice 45 % Brix 0. 8 % acidity
Mango pulp , 18^0 Brix 0.5 % acidity	10 kg	10 kg
Sugar	14. kg	10 kg
Water	16 lit.	10 lit.
Citric acid	250 g	200g
Preservative (KMS)	25 g	18 g

Sub module 5: Fermented fruit beverages

Description: It deals with the knowledge and skills related to the preparation of fermented fruit beverages. It consists of tasks related to the processing of fermented fruit beverages such as wine, cider Perry, etc. Each task structure consists of steps, terminal performance objective, and minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner.

Objectives: After its completion the trainees will be able:

- To prepare different grade wines
- To make cider [fermented beverage made from apple]
- To make orange vinegar

Tasks: To fulfill the objectives the trainees are expected to get proficiency on the following tasks:

1. Carry out major steps in making wine
2. Make dry grape wine
3. Make sweet grape wine
4. Make cider [fermented beverage made from apple]
5. Make orange wine
6. Make Perry [pear wine]

<table>
<tr><td colspan="2">Task 1 : Carry out major steps in making wine</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Select fruits for making wine
3. Carry out stemming
4. Carry out crushing
5. Add sulphur dioxide
6. Press the juice
7. Adjust sugar
8. Activate pure culture(yeast)
9. Carry out inoculation
10. Carry out fermentation
11. Carry out aging
12. Carry out clarification
13. Carry out bottling
14. Carry out sealing
15. Carry out labeling
16. Carry out storing
17. Take precautions
18. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Carry out major steps in making wine
Standard (How well):
As prescribed criteria</td><td>• Concept, need, and application of wine
• Types of wine
• Principles and procedures of making wine
• fruit selection criteria of fruits-fruits selection criteria
• Stemming
• Crushing
• Addition of sulphur dioxide
• Pressing the juice
• Adjustment of sugar
• Multiplication of pure culture (yeast)
• Inoculation
• Fermentation
• Aging
• Clarification
• Precautions to be taken</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Containers, fruit press, pulper / juicer, fermentation bins / jars, mixers, boiling pans, filters and filter presses, sieves, strainers, carbonating equipment, liquid filters, funnels, open boiling pan, steam jacket pan pasteurizer, sugar, crusher sulphur dioxide, pure culture (yeast), inoculums, bottles, thermometer, can sealer, bottle sealer etc.</td><td colspan="2">• Be careful to carry out the wine making process under most hygienic conditions.
• Handle containers, fruit press, pulper / juicer, fermentation bins / jars, mixers, boiling pans, filters and filter presses, sieves, strainers, carbonating equipment, liquid filters, funnels, open boiling pan, steam jacket pan pasteurizer, sugar, crusher sulphur dioxide, pure culture (yeast), inoculums, bottles, thermometer, can sealer, bottle sealer etc. safely.</td></tr>
</table>

<table>
<tr><td colspan="2">Task 2 : Make dry grape wine</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Select grape fruits for making dry grape wine
3. Carry out stemming
4. Carry out crushing
5. Add sulphur dioxide
6. Press the juice
7. Activ purte culture(yeast)
8. Carry out inoculation
9. Carry out fermentation
10. Carry out aging
11. Carry out clarification
12. Carry out bottling
13. Carry out sealing
14. Carry out labeling
15. Carry out storing
16. Take precautions
17. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Make dry grape wine
Standard (How well):
As prescribed criteria</td><td>• Types of grape wine: dry and sweet; light, medium, and strong.
• Concept, need, and application of dry grape wine
• Principles and procedures of making dry grape wine
• Addition of sulphur dioxide
• Pressing the juice
• Multiplication of pure culture (yeast)
• Inoculation
• Fermentation
• Aging
• Clarification
• Precautions to be taken</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Containers, fruit press, pulper / juicer, fermentation bins / jars, mixers, boiling pans, filters and filter presses, sieves, strainers, carbonating equipment, liquid filters, funnels, open boiling pan, steam jacket pan pasteurizer, crusher sulphur dioxide, pure culture (yeast), inoculums, bottles, thermometer, can sealer, bottle sealer etc.</td><td colspan="2">• Be careful to carry out the wine making process under most hygienic conditions.
• Handle containers, fruit press, pulper / juicer, fermentation bins / jars, mixers, boiling pans, filters and filter presses, sieves, strainers, carbonating equipment, liquid filters, funnels, open boiling pan, steam jacket pan pasteurizer, crusher sulphur dioxide, pure culture (yeast), inoculums, bottles, thermometer, can sealer, bottle sealer etc. safely.
Apply GMP and GHP</td></tr>
</table>

<table>
<tr><td colspan="2">Task 3 : Make sweet grape wine</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Select grape fruits for making sweet grape wine
3. Carry out stemming
4. Carry out crushing
5. Add sulphur dioxide
6. Press the juice
7. Adjust sugar
8. Activate pure culture(yeast)
9. Carry out inoculation
10. Carry out fermentation
11. Carry out aging
12. Carry out clarification
13. Carry out bottling
14. Carry out sealing
15. Carry out labeling
16. Carry out storing
17. Take precautions
18. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Make sweet grape wine
Standard (How well):
As prescribed criteria</td><td>• Concept, need, and application of dry grape wine
• Principles and procedures of making sweet grape wine
• Selection of grape fruits- fruits selection criteria
• Stemming
• Crushing
• Addition of sulphur dioxide
• Pressing the juice
• Adjustment of sugar
• Multiplication of pure culture (yeast)
• Inoculation
• Fermentation
• Aging
• Clarification
• Precautions to be taken</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Containers, fruit press, pulper / juicer, fermentation bins / jars, mixers, boiling pans, filters and filter presses, sieves, strainers, carbonating equipment, liquid filters, funnels, open boiling pan, steam jacket pan pasteurizer, sugar, crusher sulphur dioxide, pure culture (yeast), inoculums, bottles, thermometer, can sealer, bottle sealer etc.</td><td colspan="2">• Be careful to carry out the wine making process under most hygienic conditions.
• Handle containers, fruit press, pulper / juicer, fermentation bins / jars, mixers, boiling pans, filters and filter presses, sieves, strainers, carbonating equipment, liquid filters, funnels, open boiling pan, steam jacket pan pasteurizer, sugar, crusher sulphur dioxide, pure culture (yeast), inoculums, bottles, thermometer, can sealer, bottle sealer etc. safely.
Apply GMP and GHP</td></tr>
</table>

<table>
<tr><td colspan="2">Task 4 : Make cider [fermented beverage made from apple]</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Select apple fruits with high tannin content for making cider
3. Carry out crushing /grating
4. Press the juice
5. Add sugar to the juice
6. Add sulphur dioxide to the juice
7. Add ammonium hydrogen phosphate as a food supplement for yeast
8. Activate pure culture(yeast)
9. Carry out fermentation
10. Carry out aging
11. Carry out clarification
12. Heat the mature cider to 65 degree centigrade
13. Carry out filtration
14. Close bottles with crown corks
15. Pasteurize the bottles for 30 minutes at 65 degree centigrade
16. Carry out sealing
17. Carry out labeling
18. Carry out storing
19. Take precautions
20. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Make cider [fermented beverage made from apple]
Standard (How well):
As prescribed criteria</td><td>• Concept, need, and application of cider
• Principles and procedures of making cider
• Scope and importance
• Selection criteria
• Ingredients
• Fermentation
• Precautions</td></tr>
<tr><td>Tools/materials/ equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Containers, fruit press, pulper / juicer, fermentation bins / jars, mixers, boiling pans, filters and filter presses, sieves, strainers, liquid filters, funnels, open boiling pan, steam jacket pan, pasteurizer, sugar, crusher, sulphur dioxide, ammonium hydrogen phosphate, pure culture (yeast), bottles, thermometer, can sealer, bottle sealer etc.</td><td colspan="2">• Be careful to carry out the wine making process under most hygienic conditions.
• Handle containers, fruit press, pulper / juicer, fermentation bins / jars, mixers, boiling pans, filters and filter presses, sieves, strainers, liquid filters, funnels, open boiling pan, steam jacket pan, pasteurizer, sugar, crusher, sulphur dioxide, ammonium hydrogen phosphate, pure culture (yeast), bottles, thermometer safely.
Apply GMP and GHP</td></tr>
</table>

Task 5 : Make orange wine		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select orange fruits for making orange wine 3. Carry out stemming 4. Carry out crushing 5. Add sulphur dioxide 6. Extract orange juice in such a way that the orange oil is not incorporated in the juice 7. Adjust sugar 8. Activate pure culture(yeast) 9. Carry out inoculation 10. Carry out fermentation 11. Carry out aging 12. Carry out clarification 13. Carry out bottling 14. Carry out sealing 15. Carry out labeling 16. Carry out storing 17. Take precautions 18. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Make orange wine** **Standard (How well):** As prescribed criteria	• Concept, need, and application of orange wine • Principles and procedures of making orange wine • Selecting criteria • Concept of stemming • Ingredients • Precautions to be taken • Keeping records
Tools/materials/ equipment:	Safety/precautions:	
Containers, fruit press, pulper / juicer, fermentation bins / jars, mixers, boiling pans, filters and filter presses, sieves, strainers, carbonating equipment, liquid filters, funnels, open boiling pan, steam jacket pan pasteurizer, sugar, crusher sulphur dioxide, pure culture (yeast), inoculums, bottles, thermometer, can sealer, bottle sealer etc.	• Be careful to carry out the wine making process under most hygienic conditions. • Take care not to incorporate orange oil with the juice, because it slows down, and at times, stops the fermentation process completely. • Handle the tools, materials, equipment, and machines safely. • **Apply GMP and GHP**	

<table>
<tr><td colspan="2">Task 6 : Make Perry [pear wine]</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Select pear fruits for making Perry
3. Carry out crushing /grating
4. Press the juice
5. Add sugar to the juice
6. Add sulphur dioxide to the juice
7. Add ammonium hydrogen phosphate as a food supplement for yeast
8. Activate pure culture(yeast)
9. Carry out fermentation
10. Carry out aging
11. Carry out clarification
12. Heat the mature cider to 65 degree centigrade
13. Carry out filtration
14. Close bottles with crown corks
15. Pasteurize the bottles for 30 minutes at 60 degree centigrade
16. Carry out sealing
17. Carry out labeling
18. Carry out storing
19. Take precautions
20. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Make Perry [pear wine]
Standard (How well):
As prescribed criteria</td><td>• Concept, need, and application of Perry [pear wine]
• Principles and procedures of making Perry [pear wine]
• Selection criteria of fruits
• Heat/temperature requirement and timing
• Precautions to be taken
• Keeping records</td></tr>
<tr><td>Safety/precautions:</td><td colspan="2">Tools/materials/equipment:</td></tr>
<tr><td>• Be careful to carry out the wine making process under most hygienic conditions.
• Handle the tools, materials, equipment, and machines safely.</td><td colspan="2">Containers, fruit press, pulper / juicer, fermentation bins / jars, mixers, boiling pans, filters and filter presses, sieves, strainers, liquid filters, funnels, open boiling pan, steam jacket pan, pasteurizer, sugar, crusher, sulphur dioxide, ammonium hydrogen phosphate, pure culture (yeast), bottles, thermometer, can sealer, bottle sealer etc.
Apply GMP and GHP</td></tr>
</table>

Sub module 6: Fruit vinegars

Description: It deals with the knowledge and skills related to the processing of fruit vinegars. It consists of tasks related to the processing of fruit vinegars. Each task structure consists of steps, terminal performance objective, and minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner.

Objectives: After its completion the trainees will be able:

- To prepare vinegar

Tasks: To fulfill the objectives the trainees are expected to get proficiency on the following tasks:

1. Be familiar with making vinegar
2. Make vinegar from apple juice [cider vinegar]
3. Make vinegar from grape juice [wine vinegar]
4. Make vinegar from pineapple juice

Task 1 : Be familiar with making vinegar		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Prepare fruits (Selection, washing, cutting) 3. Be familiar extracting juice Be familiar with the fermentation of fruit juice (alcoholic fermentation): 4. Be familiar with adding alcohol producing yeasts to the fruit juice 5. Be familiar with adding acids (e.g. acidity for apple juice is malic acid) 6. Be familiar with adding ash 7. Be familiar with fermenting sugar in the fruit juice to ethanol (alcohol) and carbon dioxide 8. Be familiar with maintaining favorable temperature (24-27 degree centigrade) during fermentation 9. Be familiar with allowing the juice to ferment until all the sugar is converted into alcohol and carbon dioxide. 10. Be familiar with freeing the juice from yeast, pulp, and sediment by settling and racking after alcoholic fermentation to prevent bad flavor and interference with the acetic fermentation. Be familiar with the fermentation to vinegar (acetic fermentation): 11. Be familiar with oxidizing alcohol to acetic acid by acetic acid bacteria (Acetobacteria / vinegar bacteria 12. Be familiar with maintaining a generous supply of oxygen for the growth and activity of the vinegar bacteria 13. Be familiar with maintaining fermentation temperature 20-35 degree centigrade (best at 27 degree centigrade). 14. Be familiar with carrying out clarification 15. Be familiar with carrying out	**Condition (Given):** As assigned by supervisor **Task (What):** **Be familiar with making vinegar** **Standard (How well):** As prescribed criteria	• Concept, need, and application of vinegar • Principles and procedures of making vinegar • Types of vinegar • Fermentation of fruit juice (alcoholic fermentation)- principles • Fermentation to vinegar (acetic fermentation)- principles • Clarification • Pasteurization • Precautions to be taken while making vinegar

pasteurization 16. Be familiar with carrying out packaging		
Safety/precautions:	Tools/materials/equipment:	
• Be familiar to carry out the vinegar making process under most hygienic conditions. • Be familiar with handling the tools, materials, equipment, and machines safely.	• Paper, pencil, eraser, drawing table, drawing sheet and other supplies • Apply GMP (Good Manufactured Hygienic Practice)	

Task 2 : Make vinegar from apple juice [cider vinegar]		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select apple fruits for making cider vinegar 3. Wash the apple fruits 4. Extract apple juice 5. Carry out fermentation of apple juice (alcoholic fermentation): 6. Carryout fermentation to vinegar (acetic fermentation): 7. Carry out clarification 8. Carry out pasteurization 9. Carry out packaging 10. Take precautions 11. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Make vinegar from apple juice [cider vinegar] **Standard (How well):** As prescribed criteria	• Concept, need, and application of Perry cider vinegar • Principles and procedures of making cider vinegar • Fruit selection criteria • Ingredients and ratio. • Required temperature (24-27 degree centigrade) during temperature and timing • Concept of fermentation • Precautions to be taken
Tools/materials/equipment:	Safety/precautions:	
Containers, fruit press, pulper / juicer, alcohol producing yeast, malic acid, fermentation bins / jars, thermometer, pasteurizer, vinegar bacteria, bottles, can sealer, bottle sealer etc.	• Be careful to carry out the cider vinegar making process under most hygienic conditions. • Apply GMP (Good Manufactured Hygienic Practice) •	

Task 3 : Make vinegar from grape juice [wine vinegar]		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select grape fruits for making vinegar from grape juice [wine vinegar] 3. Wash the grape fruits 4. Extract grape juice 5. Carry out fermentation of grape juice (alcoholic fermentation): 6. Carryout fermentation to vinegar (acetic fermentation): 7. Carry out clarification 8. Carry out pasteurization 9. Carry out packaging 10. Take precautions 11. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Make vinegar from grape juice [wine vinegar]** **Standard (How well):** As prescribed criteria	• Concept, need, and application of vinegar from grape juice [wine vinegar] • Principles and procedures of making wine vinegar • Required ingredients and quantity • Concept of clarification, pasteurization, and packaging • Precautions to be taken
Tools/materials/equipment:	Safety/precautions:	
Containers, fruit press, pulper / juicer, alcohol producing yeast, acid, fermentation bins / jars, thermometer, pasteurizer, vinegar bacteria, bottles, can sealer, bottle sealer etc.	• Be careful to carry out the wine vinegar making process under most hygienic conditions. • Apply GMP (Good Manufactured Hygienic Practice) •	

Task 4 : Make vinegar from pineapple juice		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Select pineapple fruits for making vinegar 3. Wash the pineapple fruits 4. Extract pineapple juice 5. Carry out fermentation of pineapple juice (alcoholic fermentation): 6. Carryout fermentation to vinegar (acetic fermentation): 7. Carry out clarification 8. Carry out pasteurization 9. Carry out packaging	**Condition (Given):** As assigned by supervisor **Task (What):** **Make vinegar from pineapple juice** **Standard (How well):** As prescribed criteria	• Concept, need, and application of vinegar from pineapple juice • Principles and procedures of making vinegar from pineapple juice • Recipe and required quantity • Timing and temperature requirement • Precautions to be taken
Tools/materials/equipment:	Safety/precautions:	
Containers, fruit press, pulper / juicer, alcohol producing yeast, acid, fermentation bins / jars, thermometer, pasteurizer, vinegar bacteria, bottles, can sealer, bottle sealer etc.	• Be careful to carry out the pineapple vinegar making process under most hygienic conditions. • Apply GMP (Good Manufactured Hygienic Practice)	

Sub module 7: Drying of fruits

Description: It deals with the knowledge and skills related to drying of fruits. It consists of tasks related to the drying of fruits. Each task structure consists of steps, terminal performance objective, and minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner.

Objectives: After its completion the trainees will be able:

- To prepare dry fruit products

Tasks: To fulfill the objectives the trainees are expected to get proficiency on the following tasks:

1. Perform selection /washing of fruits
2. Perform peeling / slicing of fruits
3. Perform spreading on trays
4. Perform sulphuring
5. Perform drying
6. Perform conditioning
7. Perform packaging

<table>
<tr><td colspan="2">Task 1 : Perform selection /washing of fruits</td><td></td></tr>
<tr><td>Task steps</td><td>Terminal performance objectives</td><td>Related technical knowledge</td></tr>
<tr><td>1. Receive instruction
2. Obtain the fruits
3. Enlist fruits selection criteria for drying them
4. Identify fully ripe yet form fruits
5. Select fully ripe yet form fruits for drying
6. Manage running water
7. Wash the selected fruits thoroughly in running water
8. Store washed fruits temporarily in hygienic condition
9. Take precautions
10. Keep records</td><td>Condition (Given):
As assigned by supervisor
Task (What):
Perform selection /washing of fruits
Standard (How well):
As prescribed criteria</td><td>▪ Concept and principles
▪ Importance
▪ Process
▪ Take precautions</td></tr>
<tr><td>Tools/materials/equipment:</td><td colspan="2">Safety/precautions:</td></tr>
<tr><td>Clean running water system</td><td colspan="2">• Be careful to wash fruits in clean water.
• Apply GMP (Good Manufactured Hygienic Practice)</td></tr>
</table>

Task 2 : Perform peeling / slicing of fruits		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Take the washed fruits 3. Take a stainless steel peeler 4. Peel the cleaned fruits with the peeler 5. Take De corer 6. Decor the fruits 7. Take slicer 8. Cut the fruits into 2 cm thick slices 9. Store the slices temporarily in hygienic condition 10. Take precautions 11. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Perform peeling / slicing of fruits** **Standard (How well):** As prescribed criteria	• Concept • Importance • Taking precautions • Keeping records
Tools/materials/equipment:	Safety/precautions:	
Containers, peeler, decorer, and slicer	• Be careful to carry out peeling and slicing under most hygienic conditions. • Handle peeler, decorer, and slicer safely. • Apply GMP (Good Manufactured Hygienic Practice)	

Task 3 : Perform spreading on trays		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Take the peeled and sliced fruits 3. Take trays 4. Spread the peeled and sliced fruits on trays 5. Spread the peeled and sliced fruits at the rate of 2 kg per square foot 6. Keep it for drying 7. Ensure sufficient moisture removal from the surface while drying 8. Take precautions 9. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Perform spreading on trays** **Standard (How well):** As prescribed criteria	• Concept • Importance • Taking precautions • Keeping records
Tools/materials/equipment:	Safety/precautions:	
Trays	• Be careful to carry out spreading of peeled and sliced fruit under most hygienic conditions. • Apply GMP (Good Manufactured Hygienic Practice)	

Task 4 : Perform sulphyting		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Stack the fruit trays one over the other 3. Cover it by a wooden box 4. Burn the sulphur at the rate of 1.8 gram per kg of fresh fruit for sulphuring the fruits 5. Put fruit trays in the dryer and sulphurize them if there is nothing to cover the fruits in the trays 6. Use a bamboo basket (Doko) instead of cover and sulphurize the fruit trays for small- scale-sulphuring	**Condition (Given):** As assigned by supervisor **Task (What):** **Perform sulphyting** **Standard (How well):** As prescribed criteria	• Definition, concept, principles • Importance • Quantity and ratio • Taking precautions
Tools/materials/equipment:	Safety/precautions:	
Trays, sulphur, drier, bamboo basket / Doko	• Be careful to carry out sulphuring under most hygienic conditions. • Handle trays, sulphur, drier, bamboo basket / Doko safely. • Apply GMP (Good Manufactured Hygienic Practice)	

Task 5 :Perform drying on solar dryer		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain fruits to be dried 3. Select drier 4. Place fruits in drier 5. Maintain temperature 55 ± 5 degree centigrade 6. Dry fruits in the drier 7. Take precautions 8. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Perform drying on solar dryer** **Standard (How well):** As prescribed criteria	• Preservation by drying • Advantages of drying • Mechanism of preservation by drying • Sun drying vs. artificial drying (dehydration) • Factors to be considered in drying- air, relative humidity, temperature, velocity of air, and case hardening • Types of driers- solar, cabinet, and home driers. • Duration of drying 8 to 16 hours depending upon the type of fruits, drying temperature, air velocity, and relative humidity • Taking precautions
Tools/materials/equipment:	Safety/precautions:	
Solar, cabinet, and home driers	• Be careful to carry out drying fruits under most hygienic conditions. • Handle solar, cabinet, and home driers safely. • Apply GMP (Good Manufactured Hygienic Practice)	

Task 6 : Perform conditioning		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Obtain dried fruits 3. Put the dried fruits in the trays 4. Keep the trays in the drier 5. Left the dried fruits overnight in trays in the drier to equalize the moisture content. 6. Take precautions 7. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Perform conditioning** **Standard (How well):** As prescribed criteria	• Concept, principle, procedure, and application of conditioning • Why and when to condition the fruits • Taking precautions
Tools/materials/equipment:	Safety/precautions:	
Trays, drier	• Be careful to carry out conditioning of the dried fruits under most hygienic conditions. • Handle trays, drier safely. • Apply GMP (Good Manufactured Hygienic Practice)	

Task 7 : Perform packaging		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Take equilibrated fruit slices ready to be packed 3. Obtain tin containers 4. Obtain high density polyethylene bags 5. Pack equilibrated fruit slices block in containers 6. Pack equilibrated fruit slices block in high density polyethylene bags 7. Take a manually operated heat sealer/blue flamed candle 8. Seal the packages with a manually operated heat sealer/blue flamed candle 9. Take precautions 10. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** **Perform packaging** **Standard (How well):** As prescribed criteria	• Concept, principle, procedure, and application of packaging • Importance • Taking precautions
Tools/materials/equipment:	Safety/precautions:	
Containers, manually operated heat sealer/blue flamed candle	• Be careful to carry out packaging of the dried fruits under most hygienic conditions. • Handle containers, manually operated heat sealer/blue flamed candle safely. • Apply GMP (Good Manufactured Hygienic Practice)	

Module 5. Management and communication

Description: It deals with the knowledge and skills related to utilizing by-products of fruit processing, fruit storage, managing fruit processing activities, establishing fruit processing unit / plant, marketing of processed fruit products, and communication. It consists of tasks related to utilization of by-products of fruit processing, fruit storage, managing fruit processing activities, establishing fruit processing unit / plant, marketing of processed fruit products, and communication. Each task structure consists of steps, terminal performance objective, and minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner.

Objectives: After its completion the trainees will be able:

1. To utilize by-products of fruit processing
2. To perform fruit storage
3. To manage fruit processing activities
4. To establish fruit processing unit / plant
5. To perform marketing of processed fruit products
6. To communicate with others

Tasks: To fulfill the objectives the trainees are expected to get proficiency on the following tasks:

1. Maintain good personal hygiene and sanitation
2. Utilize by-products of fruit processing
3. Perform fruit storage
4. Manage fruit processing activities
5. Establish fruit processing unit / plant
6. Perform marketing of processed fruit products
7. Communicate with others

Task 1 : Maintain good personal hygiene and sanitation		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Trim nails 3. Groom weel 4. Were workshop shoes 5. Always were prescribed apron and gloves 6. Be care full about factory safety rules 7. Sterilized tools/equipment as prescribed 8. Keep neet and clean 9. Manage garwage station/pit or dust bin in proper place 10. Keep frequently checking of electricity system 11. Manage well drainage system 12. Manage first aid box adequately 13. Keep phone number for emergency support (Ambulence, Fire brigade, Police etc) 14. Utilize by-products of fruit processing 15. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Utilize by-products of fruit processing **Standard (How well):** As prescribed criteria	• Define by- products • Type of by-products as per fruits (apple, mango, pear, pineapple) • Utilization of by-products processed fruits (apple, mango, pears, citrus, etc) • Precautions
Tools/materials/equipment:	Safety/precautions:	

Task 2 : Utilize by-products of fruit processing		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
16. Receive instruction 17. Make ready the materials 18. utilize by-products of fruit processing 19. Take precautions 20. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Utilize by-products of fruit processing **Standard (How well):** As prescribed criteria	• Define by- products • Type of by-products as per fruits (apple, mango, pear, pineapple) • Utilization of by-products processed fruits (apple, mango, pears, citrus, etc) • Precautions
Tools/materials/equipment:	Safety/precautions:	
Well quipped by-product processing unit / plant	• Be careful to carry out the preparation of various products from the by-products of fruits processing under most hygienic conditions. • Operate by-product processing unit/plant safely.	

Task 3 : Perform fruit storage		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Identify store for given fruits for store 3. Place the fruits in store 4. Adjust the temperature in the store in available 5. Take precautions 6. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Store given fruits **Standard (How well):** As prescribed criteria	• Concept, need, principle for fruit storage • Concept, principles of cellar store, cool chamber, cold storage, and freezing storage • Required temperature as character of fruits • Precautions
Tools/materials/equipment:	Safety/precautions:	
Well quipped cellar store, cool chamber, cold storage, and freezing storage	• Be careful to carry out the preparation of various products from the by-products of fruits processing under most hygienic conditions.	

Task 4 : Manage fruit processing activities		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Plan for fruit processing activities 3. Budget fruit processing activities 4. Organize fruit processing activities 5. Direct fruit processing activities 6. Control fruit processing activities 7. Manage wastages 8. Communicate with others 9. Develop professionally 10. Take precautions 11. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Manage fruit processing activities **Standard (How well):** As prescribed criteria	• Concept, principles, and procedures for managing fruit processing activities • Major activities and functions • Waste management concept and methods • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	
Pen, paper, and other supplies		

Task 5 : Lay out fruit processing unit / plant		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Meet legal requirements 3. Prepare investment plan 4. Select factory site 5. Prepare a plan of a fruit preservation factory 6. Lay out a canning line 7. Lay out a juice plant 8. Manage factory buildings 9. Manage water supply / drainage 10. Manage manpower 11. Manage machinery / equipment 12. Run fruit processing activities 13. Maintain fruit processing activities 14. Take precautions 15. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Lay out fruit processing unit / plant **Standard (How well):** As prescribed criteria	• Concept and principles • Legal requirements • market survey and its important • Site Selection criteria • Planning process and its important • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	

Task 6 : Perform marketing of processed fruit products		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Collect demand of fruit products 3. Analyze demand of fruit products 4. Design fruit products 5. Price fruit products 6. Place fruit products 7. Promote fruit products 8. Sale fruit products 9. Record sales 10. Calculate profit / loss 11. Prepare reinvestment plan 12. Take precautions 13. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Perform marketing of processed fruit products **Standard (How well):** As prescribed criteria	• Marketing concept • Importance • Models • promotion concept • Pricing concept • Precautions to be taken
Tools/materials/ equipment:	Safety/precautions:	

Task 7 : Perform communicate with others		
Task steps	**Terminal performance objectives**	**Related technical knowledge**
1. Receive instruction 2. Prepare massage / information for communication 3. Make phone calls 4. Receive/answer phone calls 5. Prepare e-mail massage / information 6. Send e-mails massage / information 7. Receive e-mails massage / information 8. Communicate with suppliers 9. Communicate with customers/clients 10. Communicate with seniors 11. Communicate with juniors 12. Communicate with peers 13. Communicate with other stakeholders 14. Take precautions 15. Keep records	**Condition (Given):** As assigned by supervisor **Task (What):** Perform communicate with others **Standard (How well):** As prescribed criteria	• Definition, concept, importance, and models of communication • Information about email, internet, web page, • Communication channels
Tools/materials/ equipment:	Safety/precautions:	
Telephone, mobile, computer with internet connection, paper, pen, fax		

Reference

- खाद्य प्रशोधन प्रविधि, घरेलु पुस्तिका, खाध्य प्रशोधन तथा गुण नियन्त्रण विभाग
- Preservation of fruits and beverage – Siddapa and Giridharilal, India
- Hand book of Analysis and Quality Control for Fruit and Vegetables Products – S. Rangon, 2011

Module 7: Entrepreneurship Development

Total: 40 hrs

Theory: 18 hrs

Practical: 22 hrs

Course description

This course is designed to impart the knowledge and skills necessary for micro enterprise or a business unit of self-employment startup. The entire course intends to introduce enterprise, finding suitable business ideas and developing business idea to formulation of business plan.

Course objectives

After completion of this course, students will be able to:
1. Understand concept of enterprise and self-employment
2. Explore suitable business idea matching to self
3. Learn to prepare business plan
4. Learn to keep preliminary business record

S.No.	Task statements	Related technical knowledge	Time (hrs)		
			T	P	Tot.
1.	State the concept of business/enterprises	• Introduction to business/enterprise • Classification of business/enterprises • Overview of MSMEs(Micro, Small and Medium Enterprises) in Nepal • Cost & Benefits of self-employment/salaried job	4		4
2.	Grow entrepreneurial attitudes	• Wheel of success • Risk taking attitude	3		3
3.	Generate viable business ideas	• Business idea generation • Evaluation of business ideas	1	2	3
4.	Prepare business plan	• Concept of market and marketing • Description of product or service • Selection of business location • Estimation of market share • Promotional measures • Required fixed assets and cost • Required raw materials and costs • Operation process flow	9	18	27

		• Required human resource and cost • Office overhead and utilities • Working capital estimation and calculation of total finance required • Product costing and pricing • Cost benefit analysis (BEP, ROI) • Information collection method and guidelines • Individual business plan preparation and presentation			
5.	Prepare basic business records	• Day book • Payable & receivable account	1	2	3
		Total:	**18**	**22**	**40**

Textbook:

क) प्रशिक्षकहरुका लागि निर्मित निर्देशिका तथा प्रशिक्षण सामग्री, प्राविधिक शिक्षा तथा व्यावसायिक तालीम परिषद्, २०६९

ख) प्रशिक्षार्थीहरुका लागि निर्मित पाठ्यसामग्री तथा कार्यपुस्तिका, प्राविधिक शिक्षा तथा व्यावसायिक तालीम परिषद् (अप्रकाशित), २०६९

Reference book:

Entrepreneur's Handbook, Technonet Asia, 1981

General Quality Indicators

Input Level

SN	Criteria	Objectively verifiable indicator (OVI)	Means of verification (MOV)
1	**Mechanisms to identify training needs in the labour market:**		
		• Training Needs Assessment /Rapid Market Appraisal (or other appropriate method) is following standard methodology and depicts demand for skilled workers and their training needs at local level is conducted at least once per year.	TNA or RMA report
		• T&E regularly meets Chambers of Commerces, representatives of local businesses and bigger industries as well as actively participates in local employment and training review events.	No. of meetings, list of participants and minutes of the meetings.
2	**Schemes used to promote better access to VST:**		
		• Training annoucements are disseminated widely through different media (e.g., Local FM, posters, local community organization etc.)	Frequency and content of information broadcasted in media and through other channels
		• Trainees are selected as per the trainee selection guideline of the programme.	List of selected trainees (incl. detailed information on their eligibility as per the selection criteria).
3	**Availability of training curriculum and manual:**		
		• Curriculum standardised by CTEVT is accessible to the instructors.	Training event monitoring report
		• Training manuals/materials are developed based on the CTEVT standard curriculum and are of relevance for the labour market.	Training manuals/materials.
4	**Selection of Instructors:**		
		• At least two	Profile of instructors. Training event monitoring report
		• At least one of the two instructors has minimum TSLC with one year work experience or skill test level 2 pass with three years work experience	Profile of all instructors

		• At least one of the two instructors successfully completed at least five day's customized TOT for level 1 and at least four days for elementary level conducted by a nationally recognised institute (such as TITI)	Profile of all instructors
		• All instructors are oriented before training start on the overall programme as well as the use of the curriculum and manual(s).	Pre training orientation report
5	**Training Cycle Management:**		
		• Timely preparation of training calender (start and end date of training, OJT placement plan, skill testing date, job placement plan and post-training support plan)	Training calendar

Process Level

SN	Criteria	Objectively verifiable indicator (OVI)	Means of verification (MOV)
1.	**Trainees' participation:**		
		• Trainees are with regards to gender, caste, ethnicity, education level and geographical origin from the eligible target group.	Database of trainees
		• Maximum 20 per group	Database of trainees. Training event monitoring report
		• Throughout the training at least 80% of the trainees are attending.	Trainee attendance sheet. Training event monitoring report
2	**Involvement of Instructors:**		
		• The trainee vs instructors' ratio is during theoretical training maximum 20:1 and during practical training maximum 10:1.	Training event monitoring report. Training session plan
3.	**Physical Facilities**	• Adequate facilities as specified in the training programme document and fact sheet. • At least two clean toilets separate for male and female	Training event monitoring report

		with running water and soap.	
		• All tools and equipment have appropriate safety measures. Safety related information and checklist posted at the lab/ workshop. Trainers and trainees are instructed about health and safety measures. First aid box continuosly replenished, clearly marked and accessible in the workshop. Trainers are instructed on how to provide first aid.	Training event monitoring report. Training session plan.
4	**Provisions for practical training**		
		• Ratio of theoretical and practical classes is 20:80	Training event monitoring report. Training session plan.
		• Each trainee practices all tasks on the respective equiment and/ or with the tools specified in the sector and occupation-wise quality standards.	Training event monitoring report. Training session plan.
		• Each trainee participates in OJT, industrial practice, exposure visits etc. as defined in the standard curriculum.	Training event monitoring report. List of OJT placement, industrical practice, exposure visits.
5	**Provisions for soft and business skills training**		
		• Trainees have access to training on labour rights, HIV/ AIDS & reproductive health, business skills training, life skills training and overseas orientation as per their needs	Training event monitoring report. Training session plan.
6	**Instructional Plan and Implementation:**		
		• Training is implemented in accordance with the training calender.	Training event monitoring report. Training calender.
		• Lesson plan is developed based on curriculum and training calender. Log book maintained.	Training event monitoring report

		• Training follows the curriculum standardised by CTEVT and the respective manuals are used in the classroom by the instructor and trainees.	Training session plan, Training event monitoring report
7	**Provision of placement and counseling support:**		
		• Placement and counselling support in place with adequate staffing	Monitoring report
		• Experts from employers invited to trainee selection training and skill test. Employers provide OJT opportunities. Graduates are employed immediately after training.	Monitoring report, Employment & Income verification report
		• Graduates are linked to financial institutions for access to loan/ seed money for entreprise development	Monitoring report, MOU between training provider and financial institution(s)

Output Level

SN	Criteria	Objectively verifiable indicator (OVI)	Means of verification (MOV)
1	**Completion rate of training:**		
		• Not more than 10% drop-outs among trainees	Trainee database
2	**Skills testing**		
		• At least 90% of the trainees attend the skills test.	NSTB skills test results
		• At least 80% of the trainees pass the skills test.	NSTB skills test results

Outcome Level

SN	Criteria	Objectively verifiable indicator (OVI)	Means of verification (MOV)
1	**Placement rate of graduates**		
		• From each training event at least 60% of the graduates are employed.	Income verification report/ Tracer study report
		• Employed graduates earn at least the specified minimum income (if specified).	Income verification report/ Tracer study report
2	**Utilization of**		

	acquired skills at the workplace:	• 90% of the employed graduates are in employment related to the occupational training.	Income verification report/ Tracer study report
		• At least 80% of the graduates and 70% of the employers are satisfied with the skills acquired in the training.	Tracer study report. Employers survey