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Islamabad

FOOD PROCESSING & PACKAGING TECHNICIAN

LEARNER GUIDE

National Vocational Certificate Level 3

Version 1 - November, 2019

NAVTTC

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Document Version
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Islamabad, Pakistan

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Introduction

Welcome to your Learner's Guide for the *Food Processing & Packaging Technician*. It will help you to complete the programme and to go on to complete further study or go straight into employment.

The *Food Processing & Packaging Technician* programme is to engage young people with a programme of development that will provide them with the knowledge, skills and understanding to start this career in Pakistan. The programme has been developed to address specific issues, such as the national, regional and local cultures, the manpower availability within the country, and meeting and exceeding the needs and expectations of their customers.

The main elements of your learner's guide are:

- **Introduction:**
  - This includes a brief description of your guide and guidelines for you to use it effectively
- **Modules:**
  - The modules form the sections in your learner's guide
- **Learning Units:**
  - Learning Units are the main sections within each module
- **Learning outcomes**:
  - Learning outcomes of each learning units are taken from the curriculum document
- **Learning Elements:**
  - This is the main content of your learner's guide with detail of the knowledge and skills (practical activities, projects, assignments, practices etc.) you will require to achieve learning outcomes stated in the curriculum
  - This section will include examples, photographs and illustrations relating to each learning outcome
- **Summary of modules**:
  - This contains the summary of the modules that make up your learner's guide
- **Frequently asked questions**:
  - These have been added to provide further explanation and clarity on some of the difficult concepts and areas. This further helps you in preparing for your assessment.
- **Multiple choice questions for self-test**:
  - These are provided as an exercise at the end of your learner's guide to help you in preparing for your assessment.

FOOD PROCESSING & PACKAGING TECHNICIAN

Module-6

LEARNER GUIDE

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Module.6: 072100985 Perform Food Processing

Objective of the module:

After completing this module, the learner will be able to apply skills and specific knowledge to perform processing functions of food processing by food processing technician in accordance with the industry approved guidelines, procedure as well as the manufacturing order.

Duration 600 hours **Theory:** 120 hours **Practical:** 480 hours

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1: **Prepare food for processing**	**P1.** Perform sorting, grading and peeling methods for fruits and vegetables **P2.** Ensure dressing of Meat, Poultry and Marine food **P3**. Perform shelling of eggs and dry fruits **P4.** Ensure batch loading as per recipe	Define preparatory operations; (washing, sorting, grading, peeling etc.) Describe dressing of meat (removal of skin, removal of viscera and meat cuts etc. Explain the process of shelling of eggs and dry fruits. (candling, washing, breaking, hammering etc.) Describe the process of batch loading (selection, weighing, put values according to recipe in PLC etc.)	Rotary washer, color and shape sorter, abrasive peeler, lye peeler, flame peeler, knives, weighing balance, bowls
LU2: **Apply size reduction techniques**	**P1.** Perform cutting of fruits and vegetables by using different methods **P2.** Perform cutting, mincing, filleting of Meat and Fish	Define size reduction; types of cutting (diced, sliced, cubic etc.); types of cutting equipment's (knives, slicer, etc.) Describe the process of preparing meat and fish for processing. (cutting, mincing, scaling, filleting etc.)	Knives, slicer, dicer, mincer machine, grinder, milling machine.

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
	P3. Perform grinding and milling	Describe the process of grinding and milling. (Tempering, conditioning, roller mill etc.)	
LU3: **Apply extraction techniques**	**P1.** Perform extraction techniques in fruits and vegetables **P2.** Perform extraction techniques in Fat and Oil	Define extraction and methods of extraction. (Basket Press, rose head machine etc.) Explain the process of fat and oil extraction	Blender, juicer, basket press, food factory, rose head machine, knives
LU4: **Apply high temperature techniques**	**P1.** Perform pasteurization of different food products **P2.** Perform sterilization of different food products **P3.** Perform (UHT) Ultra High Temperature treatment for liquid foods **P4.** Perform blanching of Fruits and vegetables **P5.** Use dry heat method for different foods	Define pasteurization; methods of pasteurization (HTST, LTLT) Define sterilization. Define the process of UHT. Define blanching; methods of blanching. (Steam blanching, hot water blanching) Describe dry heat methods for baking (Breads, cakes etc.)	Pasteurizer, Autoclave, Oven, Steam Blancher
LU5: **Apply low temperature techniques**	**P1.** Use refrigeration/cold storage methods for different foods	Define refrigeration; Explain the process of refrigeration/ cold storage. (Controlled atmosphere storage, conventional storage)	Refrigerator, freezer, immersion freezer, cryogenic freezer,

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
	P2. Use different freezing techniques for foods **P3.** Use different chilling techniques for foods	Define freezing; methods of freezing (conventional, blast freezing, immersion freezing, cryogenic freezing etc.) Define chilling; describe methods of chilling (Air chilling, liquid chilling, ice chilling etc.)	blast freezer
LU6: Apply fermentation techniques	**P1.** Perform lactic acid fermentation for foods **P2.** Perform Acetic Acid fermentation for foods **P3.** Perform Alcoholic fermentation for foods	Define fermentation; define lactic acid fermentation; explain the Process of lactic acid fermentation (pickle production, yoghurt etc.) Define acetic acid fermentation; explain its process. (vinegar production) Define alcoholic fermentation; explain its process (Bread, alcoholic beverages etc.)	Incubator, Fermenter, tight vessels, molds, mixer, oven
LU7: Apply evaporation techniques	**P1.** Use different evaporation techniques **P2.** Use spray drying method for liquid foods **P3.** Perform drum drying for foods	Define evaporation; Explain different techniques of evaporation (climbing film evaporator, falling film evaporator, horizontal evaporator etc.) Define spray drying; explain the process of spray drying. (spray drying of milk, eggs, juices etc.) Define drum drying; Describe the process of drum drying (tomato slurry drying etc.)	climbing film evaporator, falling film evaporator, horizontal evaporator, spray dryer, drum drier, boiler, Steam Generator
LU8: Monitor adding	**P1.** Check flavor, aroma and appearance of ingredients	Define sensory evaluation; methods of sensory evaluation (pair comparison test,	Artificial nose, sensory evaluation booths,

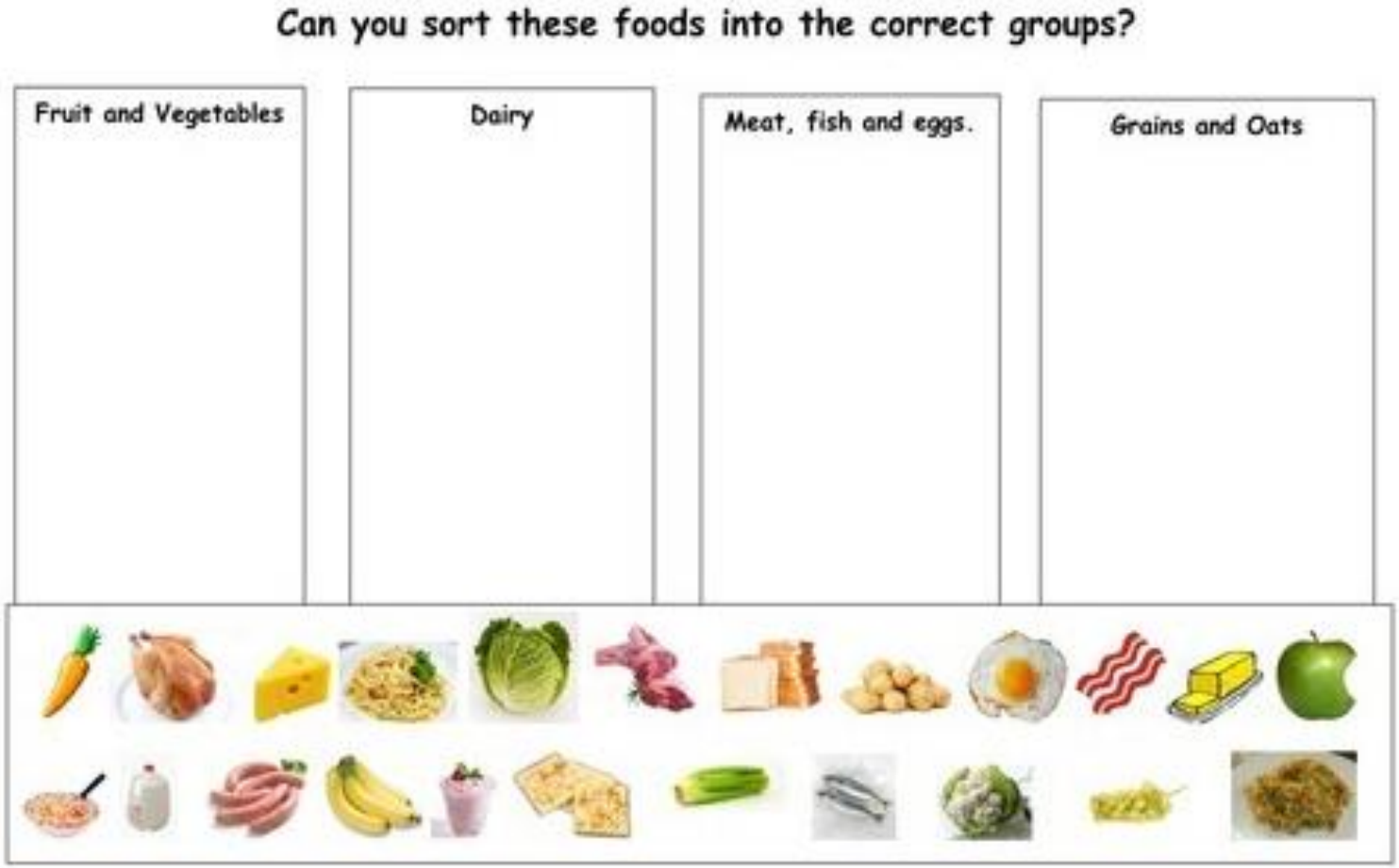
Learning Unit	Learning Outcomes	Learning Elements	Materials Required
of ingredients	**P2.** Ensure addition of ingredients as per specification **P3.** Maintain record of ingredients	rating test, descriptive test etc.) Describe labelling of ingredients; visual inspection Describe record keeping (log books, checklists)	printer
LU9: Push batches to preservation and for packaging process	**P1.** Perform incubation/Maturation for different food **P2.** Ensure storage of finished products at low temperature **P3.** Perform Hardening of frozen products	Explain the process of incubation. (fermentation); Explain the process of ageing (cheese) Describe the process of storing at low temperature (chilling, refrigeration, cold storage etc.) Define hardening; explain the process of hardening for frozen foods (ice-cream etc.)	Incubator, fermenter, airtight vessels, freezer, refrigerator, blast freezer.
LU10: Produce beverages	**P1.** Prepare carbonated drink as per recipe **P2.** Prepare non-carbonated drink as per recipe	Define carbonated beverages; explain the process of carbonated beverages manufacturing. (water treatment, concentrate production, carbonation, filling, capping etc.) Define non-carbonated beverages; explain the process of non-carbonated beverages manufacturing. (extraction of juices, mixing of ingredients, filling, capping etc.)	Carbonation unit, squeezers, juice extractor, capping machine.
LU11: Handle food	**P1.** Use different preservative chemicals for food	Define food additive and preservative; Explain the role of preservatives in food preservation. (nature, type, concentration	Level Transmitters, Agitators

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
additives	preservation **P2.** Perform enrichment and fortification **P3.** Use functional additives to improve physical and chemicals properties	etc.) Define enrichment and fortification; explain laws regarding enrichment and fortification. (vitamins, minerals) Define functional additives; explain the role of functional additives to improve the characteristics of food. (flavor enhancer, bread improver etc.)	
LU12: Perform basic calculation	**P1.** Perform dry and wet calculation for ingredients **P2.** Calculate process losses	Describe the process of weighing wet and dry ingredients. (w/w, w/v) Describe calculation of losses during processing. (drying, spillage, analysis etc.)	Weighing balance, measuring spoons, calculator, measuring jugs

ADDITIONAL SUPPORTIVE MATERIAL

Module 6
LU1:
Prepare food for processing

Sorting

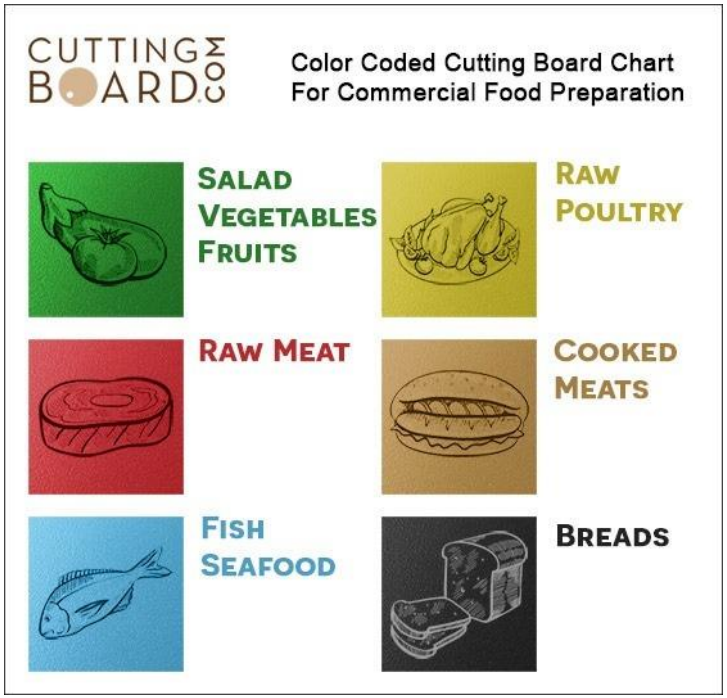


https://www.tes.com/teaching-resource/sorting-foods-into-groups-11006619

Grading

http://www.clovermeadowsbeef.com/wp-content/uploads/2013/11/USDA-Grading-Scale.jpg

Cutting Board Colors and Codes



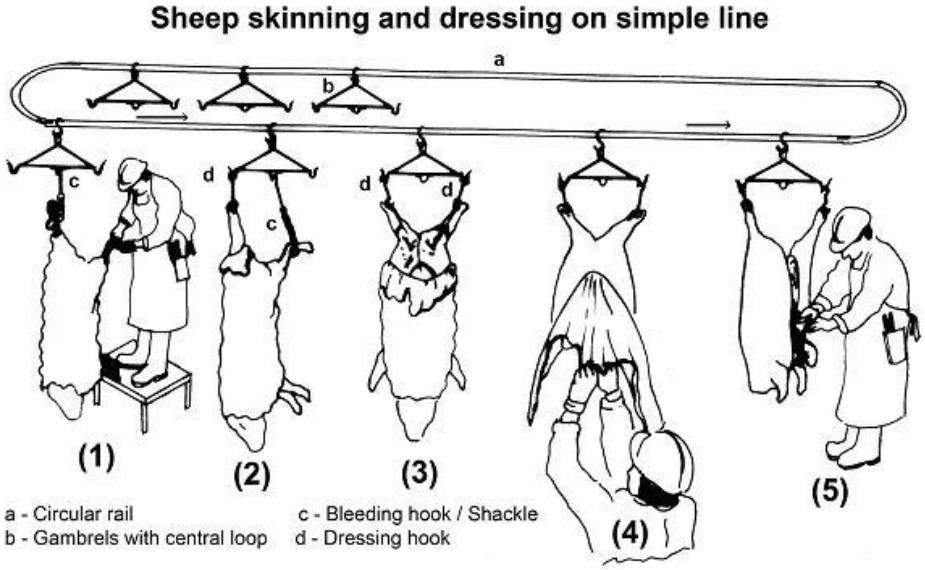
https://www.cuttingboard.com/custom-plastic-hdpe-color-cutting-board-3-4-thick/

Types of Cutting

https://thetable.homechef.com/home-chef-how-to-work-that-knife/

Dressing of Meat

http://www.fao.org/3/ai410e/ai410e06.htm



Poultry Processing Line

https://youtu.be/yF7W5a4Xv3E

Meat Processing Line
https://youtu.be/oXoOws_PBWE
Fish Processing Line
https://youtu.be/9jiispK7yVw
Grading of Eggs
https://youtu.be/toMJUI33kAo

LU2:
Apply size reduction techniques
Different Cutting Techniques
https://youtu.be/8VBnaFhOEn8

Meat Cutting
https://youtu.be/Uq_GB3ldQW8

Milling of Wheat
https://youtu.be/I7RbITKnbCI

LU3:

Apply extraction techniques
Juice Extraction Techniques
https://youtu.be/79X28u-vZbk

Oil Extraction Techniques

https://www.youtube.com/watch?v=9pPKj8s0OtA&feature=youtu.be

LU4:

Apply high temperature techniques

Milk Pasteurization Techniques

https://youtu.be/N0SkAbFwFgI

Ultra Heat Treatment (UHT) Process

https://youtu.be/iampYfB4ieI

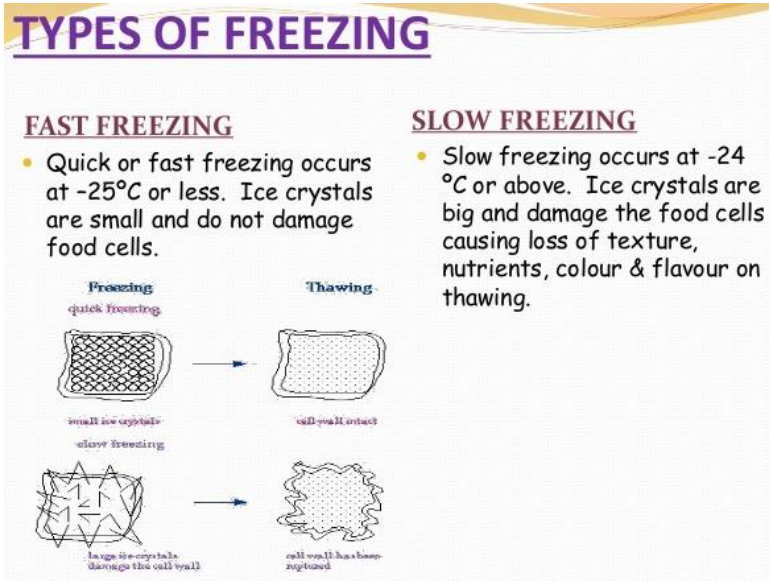
LU5:

Apply low temperature techniques

Refrigeration Process

https://youtu.be/L5jQqmaFKOE

Types of Freezing



https://image.slidesharecdn.com/freezing-150515065541-lva1-app6892/95/freezing-6-638.jpg?cb=1431673043

Tunnel Freezer
https://youtu.be/zAnVGeKjXIE
Tunnel Freezer
https://youtu.be/zAnVGeKjXIE
LU6:
Apply fermentation techniques
Types of Fermentation
https://youtu.be/XREALVgxBEI
Lactic Acid Fermentation Process
https://youtu.be/iyuiqR1bVAQ
LU7:
Apply evaporation techniques
Spray Drying Process

https://youtu.be/0o4ZCjHnaRw

Drum Drying Process
https://youtu.be/TAbM6mx4DfY
LU9:
Push batches to preservation and for packaging process
Incubation and its types
https://youtu.be/ax_YGKmnt-M
LU10:
Produce beverages
Soft drinks Manufacturing Line
https://youtu.be/jFfEujcQLT0

FOOD PROCESSING & PACKAGING TECHNICIAN

Module-7

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Module.7: 072100983 Perform Packaging as per Manufacturing Order

Objective of the module:

After completing this module, the learner will be able to apply skills and knowledge to perform packaging of processed products as per industry's approved guidelines and procedures.

Duration 120 hours **Theory:** 24 hours **Practical:** 96 hours

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1: **Receive packaging materials as per manufacturing order (jars, bottles, trays, boxes, tin box etc)**	**P1.** Check and receive printed/ unprinted, leaflets, cups, master cartons, labels as per packing order. **P2.** Maintain the temperature and humidity of workplace as per requirements of specifications of manufactured product **P3.** Check the Batch Number, manufacturing and expiry date against each labeled packing as per manufacturing order **P4.** Ensure all relevant entries manually or electronically as per specifications given in manufacturing order **P5.** Intimate to section in-charge after completion of task	Explain types of packaging material. (leaflets, PVC, tin can etc.); Define levels of packaging. (primary, secondary, tertiary) Describe the role of maintenance of temperature and humidity for workplace. (e.g. bread, ice-cream, meat etc.) Explain the procedure for checking information regarding label. (batch number, manufacturing, expiry dates, etc.) Describe the procedure to affirm the entries as per manufacturing order. (ingredients, manufacturing and expiry dates etc.) Describe the importance of status log book. (fill status logbook, countersign by section in-charge etc.)	Containers, Blister/strip machine, Tertiary packing machine, Printing machines, Metal detectors, Rejecters, Shrink machine, Tape sealers, Lifters for primary packaging material

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU2: **Perform vetting for contamination/sterilization**	**P1.** Ensure chemicals used for packaging material sterilization are eliminated **P2.** Make sure the drying of packaging material is done according to standard **P3.** Ensure microbial analysis of packaging material before packing	Explain the process of sterilization for packaging material. (air temperature, swab test) Describe the methods of drying for packaging materials. (Hot air drying) Describe the process of microbiological analysis. (TPC, TVC, Swab Test)	Incubator, petri dishes, swab sticks, hot air blowers.
LU3: **Check packaging materials integrity/quality**	**P1.** Check Longitudinal Seal (LS) and Transversal Seal (TS) as per standard **P2.** Check thickness and dimensions of packaging material **P3.** Perform leakage test of packaging material **P4.** Perform in process checks to avoid any wastages	Explain the procedure for advanced vision inspection, x-ray test and deformation test etc. Explain the process of grammage test, thickness test and dimension test for packaging material. Describe the process of ink test. (Tetra Pack etc.) Describe steps involved in avoiding wastage. (Design, date print, position of label etc.)	X-ray machine, drying oven, pressure test machine
LU4: **Verify labeled contents as per**	**P1.** Check Batch. No. manufacturing date, expiry and pack size	Describe the verification process for labelling. (batch no., manufacturing date, weight etc.)	Weighing balance, sensory evaluation booths,

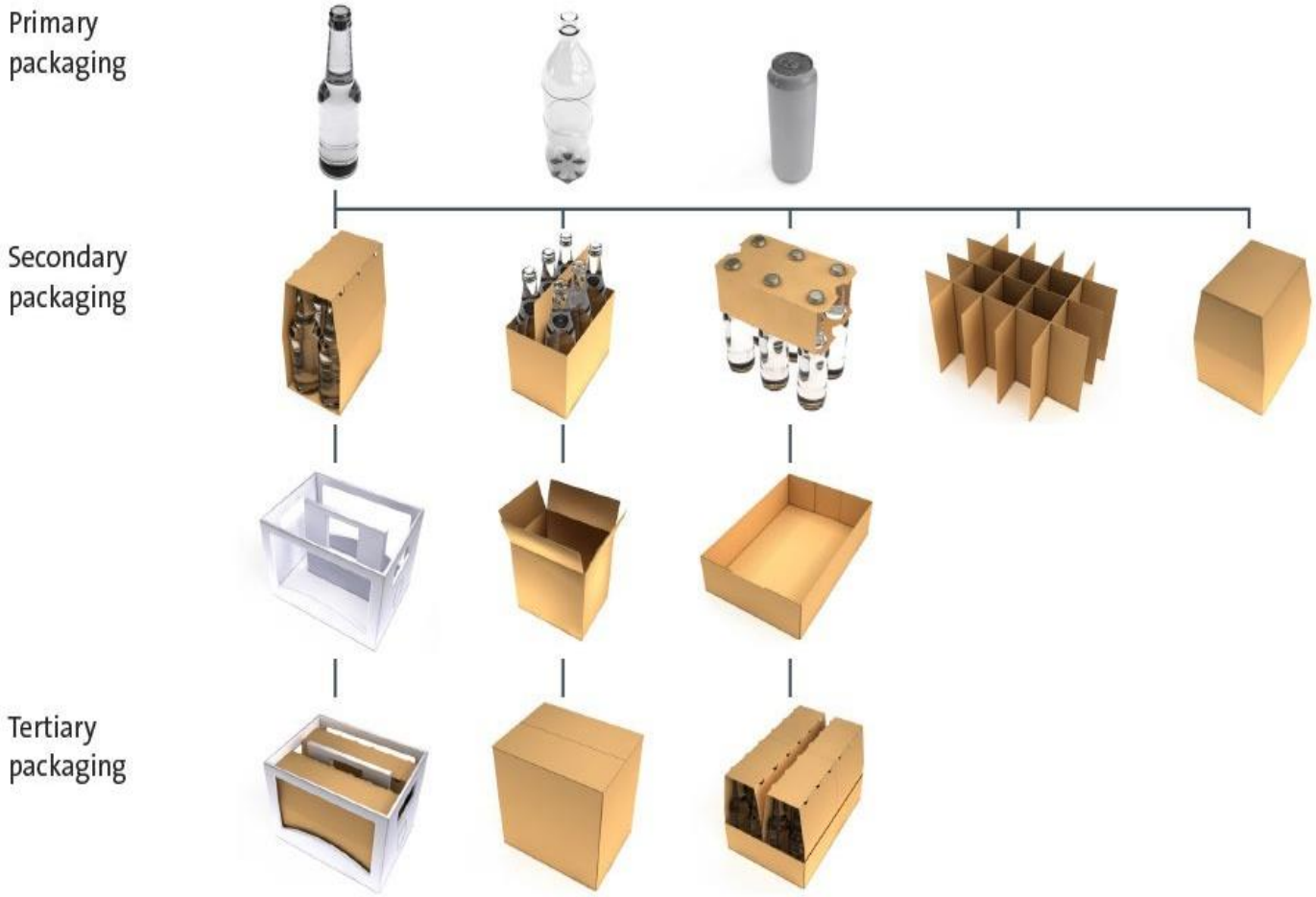
Learning Unit	Learning Outcomes	Learning Elements	Materials Required
manufacturing order	**P2.** Verify printing quality and content as per standard	Describe the procedure to verify the printing quality. (visual inspection)	sampling cups
LU5: **Perform over printing**	**P1.** Perform cleaning of sensors and printing jets **P2.** Verify alignment of printing on packaging material **P3.** Ensure printing on every packet **P4.** Update batch number according to the manufacturing order **P5.** Check each master carton label before pasting it on each sealed master carton for its product name, Manufacturing date, expiry date, master cartons No., quantity of units & packaging date	Describe process for cleaning of sensors and printing jets. (manual cleaning, use of solvents) Explain alignment of printing. (Visual check position of label and make adjustment) Describe visual inspection of labels randomly. (Randomly inspect the packed product after specified interval) Describe the procedure for updating batch number. Describe the procedure for inspection of master carton for labelling (product name, Manufacturing date, expiry date, master cartons No., quantity of units & packaging date)	Solvents, photocell
LU6: **Produce samples to try out different materials and designs**	**P1.** Ensure to run the samples as per provided recipe **P2.** Make sure to separate all the batch from running production	Describe the procedure for making sample according to product. (choose of right material, set the proper design, packaging material requirement as per product etc.) Describe the procedure for running newly designed package separately.	Rigid, semi-rigid, flexible packaging materials, metal containers

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
	P3. Report to supervisor in case of any deviation regarding new packaging material/recipe	Describe the importance of reporting any deviation regarding packaging material. (color, shape, Logo, product Change etc.)	
LU7: Ensure packaged products meet set requirements	**P1.** Ensure net content of product as per label **P2.** Ensure packaged product labeling as per regulatory requirements	Explain the procedure of weighing net weight, drained weight and gross weight. Write down regulatory requirements for labelling. (name of product, license number, manufacturing and expiry date etc.)	Weighing balance
LU8: Make tertiary packaging for bulk handling for warehouses storage & shipping/transport	**P1.** Perform pelleting of packaged products **P2.** Ensure shrink wrapping of pallets **P3.** Ensure pallet labeling	Define pelleting; Describe the procedure of pelleting. (stacking limit etc.) Define integrity of pellets. Describe importance of pellet labelling. (Proper Storage, FIFO etc.)	Stretch/ shrink wrapping machine
LU9: Protect finished product from environmental factors	**P1.** Control temperature and humidity of warehouse. **P2.** Avoid exposure of heat and direct sunlight of finished product	Describe the importance of controlling temperature and humidity during storage. (chemical reactions, shelf life) Explain the effect of heat and sunlight on the finished goods. (browning, discoloration, rancidity etc.)	Thermometer, humidity meter

Types of Packaging Material

https://youtu.be/mLXfZGAV5Gw

Levels of Packaging Material



https://www.webpackaging.com/Up/Comp/3000/11234737/11235338-GZUFJGUN/i/main/image.jpg

Packing vs Packaging

https://pediaa.com/wp-content/uploads/2015/12/Difference-Between-Packing-and-Packaging-infographic.jpg

Manufacturing of Paper Packaging Material

https://youtu.be/fR-esiS1Pn0

Tetra Pack Filling Machine

https://youtu.be/PkQW3-RjqEE

Functions of Packaging

https://youtu.be/grU9mOJ88yk

Printing of Paper

https://youtu.be/pK5UWLUh2u4

LU8:
Make tertiary packaging for bulk handling for warehouses storage & shipping/transport

Shrink Wrapping Machine

https://youtu.be/U11wAB5Ffjw

FOOD PROCESSING & PACKAGING TECHNICIAN

Module-8

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Module.8: 072100984 Ensure hazards Analysis Critical Control Points (HACCP) & Food Safety Management System

Objective of the module:

After completing this module, the learner will be able to apply skills and knowledge to control food hazards by applying HACCP, a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement, manufacturing, distribution and consumption of the finished product.

Duration 40 hours **Theory:** 08 hours **Practical:** 32 hours

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1: **Apply HACCP principles in the production**	***P1.*** *Conduct a hazard analysis* to develop a list of hazards which are of such significance and reasonably likely to cause injury or illness *(Principle 1)* ***P2****. Determine critical control points* to prevent or eliminate a food safety hazard or reduce it to an acceptable level *(CCPs), (Principle 2)* ***P3.*** *Establish critical limits* as per regulatory standards and industry guidelines, *(Principle 3)* ***P4****. Establish monitoring procedures* to produce an accurate record for future use in verification *(Principle 4)*	Define hazard; Enlist types of hazards; Describe the process to conduct hazard analysis. (previous hazard/ accidental records) Explain the procedure to identify the Critical Control Points in a process line. (heat treatment, cooking etc.) Describe the process to draw Critical Limits. (temperature, time, weight etc.) Define operational pre-requisite program (OPRP); Describe the procedure of monitoring CCP to reduce the occurrence of hazard. (check list, log sheet etc.) Describe procedure to identify problems and to rectify those issues. (Physical,	Decision Tree

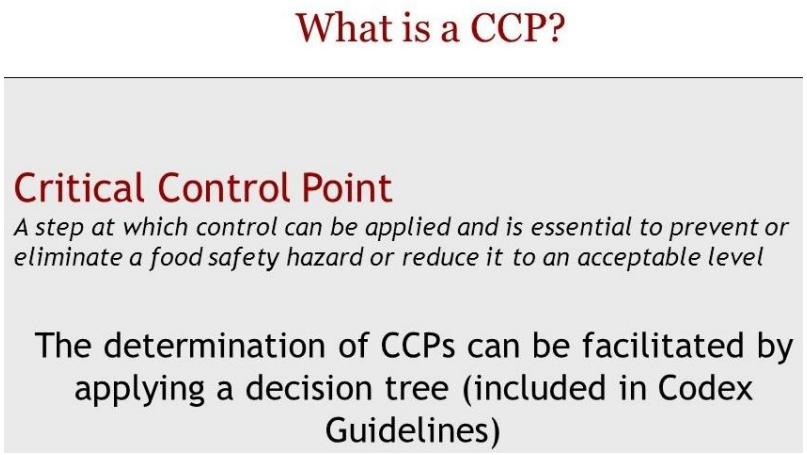
Learning Unit	Learning Outcomes	Learning Elements	Materials Required
	P5. *Establish corrective actions* to identify health hazards and to establish strategies to prevent, eliminate, or reduce their occurrence *(Principle 5)* ***P6.*** *Establish verification procedures for identification* of the hazards, critical control points, critical limits *as per industry guidelines (Principle 6)* ***P7.*** *Establish record-keeping and documentation procedures as per industry guidelines/procedure (Principle 7)*	chemical, biological hazards and allergen) Explain the procedure for identification of activities such as auditing of CCP's, record review, instrument calibration as part of verification activities to affirm the removal of hazard. Describe recording information to prove that food was produced safely according to HACCP plan. (Logbooks, checklists, verification procedure etc.)	
LU2: **Apply food safety management system elements in the production**	**P1.** Ensure Food safety systems based on the HACCP **P2.** Address risks and controls (specific technologies) at various stages of the food supply chain based on food type	Describe the importance of Food Safety Management System in a format that removes the unnecessary technical jargon and instead uses clear, concise language and engaging graphics to help your team understand their role and responsibilities to prepare food safely. Explain the importance of monitoring and their control procedures to produce safe food. (contamination, adulteration, design	Risk Assessment Tools

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
		of equipment etc.)	
LU3: **Participate in internal audit procedures**	**P1.** Ensure implementation of all relevant SOPs. **P2.** Maintain record of all checklists and logs **P3.** Perform self-assessment and gap closure of all applicable standards	Define SOP's; Describe the implementation of SOP's. Describe the importance of maintaining record. (checklists, log books) Define risk based *internal auditing* (RBIA) as a methodology that links *internal auditing.*	Checklists, Log Sheets

LU1:
Apply HACCP principles in the production

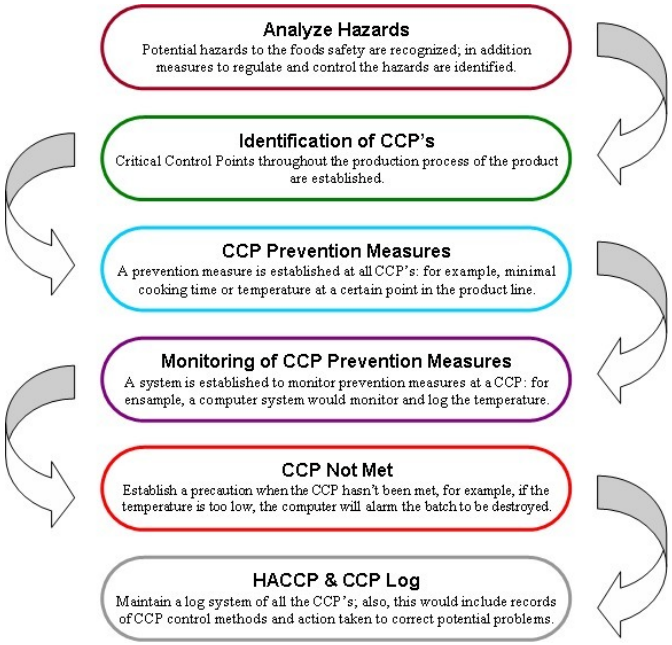
https://blog.smartsense.co/hs-fs/hubfs/principles.png?width=600&name=principles.png

Critical Control Point (CCP)



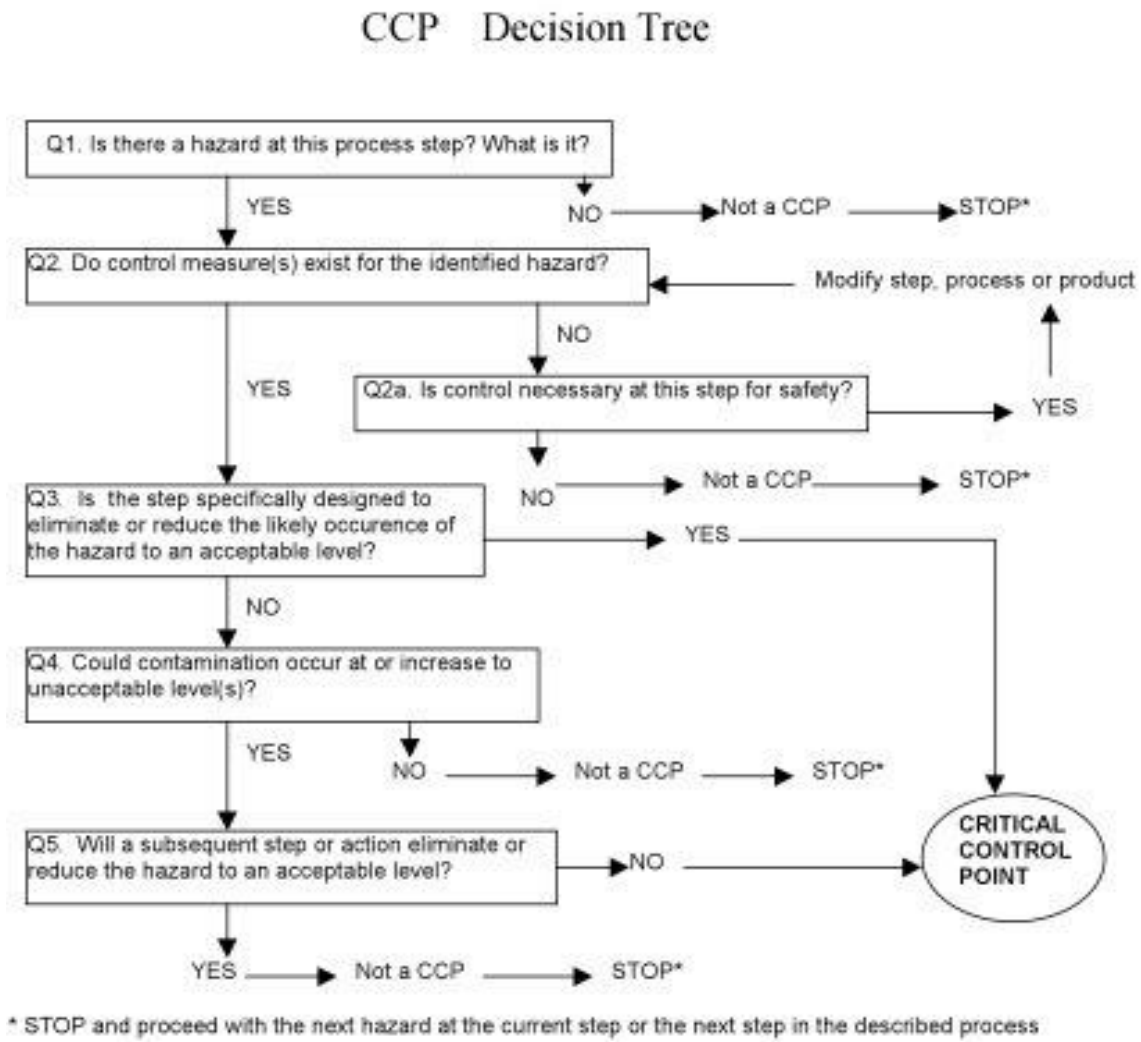
https://images.slideplayer.com/21/6327575/slides/slide_3.jpg

HACCP



https://wikieducator.org/images/2/2a/HACCP_Seven_Principles.png

HACCP Decision Tree



https://www.progress-safety.co.uk/wp-content/uploads/2015/07/HACCP-Decision-Tree.jpg

LU3:

Participate in internal audit procedures

Biohazard Identification

https://www.inspection.gc.ca/DAM/DAM-food-aliments/STAGING/images-Images/food_fsep_man_figure5_1346080956812_eng.jpg

Hazard Identification	Form 5
Process/Product name(s):	
List all biological hazards related to ingredients, incoming material, processing steps, cross-contamination points.	
Identified biological hazards	**Controlled at**

Date: _____ Approved by: _____

Chemical Hazard Identification

Hazard Identification	Form 6
Process/Product name(s):	
List all chemical hazards related to ingredients, incoming material, processing steps, cross-contamination points.	
Identified chemical hazards	**Controlled at**

Date: _____ Approved by: _____

https://www.inspection.gc.ca/DAM/DAM-food-aliments/STAGING/images-images/food_fsep_man_figure6_1346081027795_eng.jpg

Physical Hazard Identification

Hazard Identification	Form 7
Process/Product name(s): List all physical hazards related to ingredients, incoming material, processing steps, cross-contamination points.	
Identified physical hazards	Controlled at

Date: _____ Approved by: _____

https://www.inspection.gc.ca/DAM/DAM-food-aliments/STAGING/images-images/food_fsep_man_figure7_1346081083903_eng.jpg

Uncontrolled Hazzard List

Hazards Not Controlled by the Establishment	Form 9
Process/Product name(s): List here any biological, chemical and physical hazards that are not controlled by the establishment	
Hazards	Indicate how the hazard could be addressed (cooking instructions, public education, "use before" date, etc.)

Date: _____ Approved by: _____

https://www.inspection.gc.ca/DAM/DAM-food-aliments/STAGING/images-images/food_fsep_man_figure9_1346081207229_eng.jpg

List of CCP

Critical Control Points						Form 10
Product name						
CCP number	Hazard Description and Control measure	Critical Limits	Monitoring Procedures	Deviation Procedures	Verification Procedures	HACCP Records

Date: _____ Approved by: _____

https://www.inspection.gc.ca/DAM/DAM-food-aliments/STAGING/images-images/food_fsep_man_figure10_1346081268837_eng.jpg

Process Controls (PC) Form 11						
Product name						
PC & associated CCP number	Hazard Description	Standards	Monitoring Procedures	Deviation Procedures	Verification Procedures	HACCP Records

Date: _____ Approved by: _____

https://www.inspection.gc.ca/DAM/DAM-food-aliments/STAGING/images-images/food_fsep_man_figure11_1346081343086_eng.jpg

Module summary

Course: *Food Processing & Packaging Technician (Level III) (0721 FPT 006)*	**Total Course Duration:** 910 Hours
Course Overview:	
In this training program trainee will learn and acquire specialized knowledge and practical skills required to function as a Food Processing & Packaging Technician in Food Processing and Packaging industry. The specific objectives of developing these qualifications are as under: • Improve the overall quality of training delivery and setting national benchmarks for training of Food Processing & Packaging Technician in the country. • Provide flexible pathways and progressions to learner enabling them to receive relevant, up-to-date and current skills in Food Industry. • Provide basis for competency-based assessment which is recognized and accepted by employers in modern days. • Establish a standardized and sustainable system of training in consultation with the industry for Food Processing & Packaging Technician in the country.	

Module	Learning Unit	Duration
Module 1.		30
Module 2.		20
Module 3.		30
Module 4.		40
Module 5.		30
Module 6. **Perform Food Processing**	**LU1.** Prepare food for processing **LU2.** Apply size reduction techniques **LU3.** Apply extraction techniques	600

Module	Learning Unit	Duration
	LU4. Apply high temperature techniques **LU5.** Apply low temperature techniques **LU6.** Apply fermentation techniques **LU7.** Apply evaporation techniques **LU8.** Monitor adding of ingredients **LU9.** Push batches to preservation and for packaging process **LU10.** Produce beverages **LU11.** Handle food additives **LU12.** Perform basic calculation	
Module 7. **Perform Packaging as per Manufacturing Order**	**LU1.** Receive packaging materials as per manufacturing order (jars, bottles, trays, boxes, tin box etc.) **LU2.** Perform vetting for contamination/sterilization **LU3.** Check packaging materials integrity/quality **LU4.** **LU5.** Verify labeled contents as per manufacturing order **LU6.** Perform over printing **LU7.** Produce samples to try out different materials and designs **LU8.** Ensure packaged products meet set requirements **LU9.** Make tertiary packaging for bulk handling for warehouses storage & shipping/transport **LU10.** Protect finished product from environmental factors	120
Module 8. **Ensure hazards Analysis Critical Control Points (HACCP) & Food Safety Management System**	**LU1.** Apply HACCP principles in the production **LU2.** Apply food safety management system elements in the production **LU3.** Participate in internal audit procedures	40

Frequently Asked Questions

1. What is Competency Based Training (CBT) and how is it different from currently offered trainings in institutes?	Competency-based training (CBT) is an approach to vocational education and training that places emphasis on what a person can do in the workplace as a result of completing a program of training. Compared to conventional programs, the competency based training is not primarily content based; it rather focuses on the competence requirement of the envisaged job role. The whole qualification refers to certain industry standard criterion and is modularized in nature rather than being course oriented.
2. What is the passing criterion for CBT certificate?	You shall be required to be declared “Competent” in the summative assessment to attain the certificate.
3. What are the entry requirements for this course?	The entry requirement for this course is Middle or equivalent.
4. How can I progress in my educational career after attaining this certificate?	You shall be eligible to take admission in the National Vocational Certificate in level-5, DAE in Food Processing Technology or equivalent course. In certain case, you may be required to attain an equivalence certificate from The Inter Board Committee of Chairmen (IBCC).
5. If I have the experience and skills mentioned in the competency standards, do I still need to attend the course to attain this certificate?	You can opt to take part in the Recognition of Prior Learning (RPL) program by contacting the relevant training institute and getting assessed by providing the required evidences.
6. What is the entry requirement for	There is no general entry requirement. The institute shall assess you, identify your competence gaps and offer

Recognition of Prior Learning program (RPL)?	you courses to cover the gaps; after which you can take up the final assessment.
7. Is there any age restriction for entry in this course or Recognition of Prior Learning program (RPL)?	There are no age restrictions to enter this course or take up the Recognition of Prior Learning program
8. What is the duration of this course?	The duration of the course work is 2 years (4 Levels).
9. What are the class timings?	The classes are normally offered 25 days a month from 08:00am to 01:30pm. These may vary according to the practices of certain institutes.
10. What is equivalence of this certificate with other qualifications?	As per the national vocational qualifications framework, the level-4 certificate is equivalent to Matriculation. The criteria for equivalence and equivalence certificate can be obtained from The Inter Board Committee of Chairmen (IBCC).
11. What is the importance of this certificate in National and International job market?	This certificate is based on the nationally standardized and notified competency standards by National Vocational and Technical Training Commission (NAVTTC). These standards are also recognized worldwide as all the standards are coded using international methodology and are accessible to the employers worldwide through NAVTTC website.
12. Which jobs can I get after attaining this certificate? Are there job for this certificate in public sector as well?	You shall be able to take up jobs in Food Processing industry like, Dairy industry, Beverage industry, baking and confectionery industry, meat and egg industry as well as fruits/vegetable processing industry.
13. What are possible career progressions in industry after attaining this	You shall be able to progress up to the level of supervisor after attaining sufficient experience, knowledge and skills during the job. Attaining additional

certificate?	relevant qualifications may aid your career advancement to even higher levels.
14. Is this certificate recognized by any competent authority in Pakistan?	This certificate is based on the nationally standardized and notified competency standards by National Vocational and Technical Training Commission (NAVTTC). The official certificates shall be awarded by the relevant certificate awarding body.
15. Is on-the-job training mandatory for this certificate? If yes, what is the duration of on-the-job training?	On-the-job training is not a requirement for final / summative assessment of this certificate. However, taking up on-the-job training after or during the course work may add your chances to get a job afterwards.
16. How much salary can I get on job after attaining this certificate?	The minimum wages announced by the Government of Pakistan in 2019 are PKR 17,500. This may vary in subsequent years and different regions of the country. Progressive employers may pay more than the mentioned amount.
17. Are there any alternative certificates which I can take up?	There are some short courses offered by some training institutes on this subject. Some institutes may still be offering conventional certificate courses in the field.
18. What is the teaching language of this course?	The leaching language of this course is Urdu and English.
19. What is the examination / assessment system in this program?	Competency based assessments are organized by training institutes during the course which serve the purpose of assessing the progress and preparedness of each student. Final / summative assessments are organized by the relevant qualification awarding bodies at the end of the certificate program. You shall be required to be declared “Competent” in the summative assessment to attain the certificate.
20. Does this certificate enable me to work as	You can start your small business of Baking, juice processing, carbonated beverages and confectionery

freelancer?	etc. You may need additional skills on entrepreneurship to support your initiative.

Test Yourself (Multiple Choice Questions)

Module 06

29. What type of fruit / vegetable is peeled by Abrasive peeler?
    A. Apricot
    B. Carrot
    C. Plums
    D. Tomatoes
30. What does Lye peeler peel?
    A. Apricot
    B. Carrot
    C. Potatoes
    D. Turnip
31. What is cutting technique that is used in pineapple?
    A. Slicing
    B. Dicing
    C. Pitting
    D. Coring
32. How fish is cut to prepare it for frying?
    A. Steaking
    B. Filleting
    C. Pitting
    D. Coring
33. How fat is extracted from fatty tissues of animals?
    A. Shelling
    B. Rendering
    C. Pressing
    D. Trimming

34. How pathogenic microorganisms are killed in liquid milk?
    A. Pasteurization
    B. Sterilization
    C. Tyndallisation
    D. Distillation
35. Which is the process used for destruction of all spoilage microorganisms in foods?
    A. Pasteurization
    B. Sterilization
    C. Tyndallisation
    D. Distillation
36. What is the temperature used in UHT processing?
    A. 71 ºC
    B. 85 ºC
    C. 95 ºC
    D. 140 ºC
37. How green color in plant materials can be fixed during processing?
    A. Pasteurization
    B. Blanching
    C. Vacuuming
    D. Canning
38. What is example of flavour enhancer?
    A. Monosodium glutamate
    B. Sodium chloride
    C. Calcium chloride
    D. Sodium benzoate
39. What type of heating method is used in bread?
    A. Bar B Queuing
    B. Frying
    C. Boiling
    D. Baking
40. What type of freezing method is attained by liquefied cold gases?
    A. Sharp freezing

B. Blast freezing
C. Cryogenic freezing
D. Immersion freezing

41. What is particular example of alcoholic fermentation?
    A. Wines
    B. Yoghurt
    C. Pickles
    D. Vinegar
42. What percentage of acetic acid does vinegar contain?
    A. 1%
    B. 2%
    C. 3%
    D. 4%
43. What type of dried product is prepared by spray drier?
    A. Dried apricot
    B. Dried plum
    C. Dried vegetables
    D. Dried Milk
44. What is the type of liquid that quenches our thirst in addition to energy is:
    A. Whey
    B. Soup
    C. Drinks
    D. Brine
45. What is the common preservative used in all food preparations?
    A. Calcium propionate
    B. Ammonium chloride
    C. Sodium benzoate
    D. Potassium sulphate
47. How particular taste, texture and aroma are developed in cheddar cheese?
    A. Freezing
    B. Ripening
    C. Scalding
    D. Blanching

Module 07

48. What type of chemical can sterilize the environment for packaging of foods?
    A. H_2
    B. H_2O
    C. H_2O_2
    D. H_3O
49. How packaging material is vetted before use to be free from sustainable micro flora?
    A. TPC
    B. TVC
    C. TSS
    D. TDS
50. By which method integrity of tetra pack seals is determined?
    A. Ink
    B. Air
    C. Weight
    D. Water
51. What type of term is related to storage and warehousing?
    A. MSNF
    B. FIFO
    C. PIPO
    D. MFGD
52. What is the condition in which bad smell and taste is produced in foods containing fats during storage?
    A. Browning
    B. Bleaching
    C. Rancidity
    D. Caramelization

Module 08

53. How much principles are included in HACCP system?
    A. 3
    B. 5
    C. 7
    D. 9
54. What is food safety management system?
    A. SGS
    B. ISO 17025
    C. HACCP
    D. BVQI
55. Identify the area where HACCP is applied?
    A. Wood shops
    B. Metal works
    C. Meat workstation
    D. Automobiles
56. By which of the following, severity of hazard can be managed?
    A. CCL
    B. CCP
    C. SOP
    D. SSOP

KEY for MCQ's

Sr. #	Ans.	Sr. #	Ans.	Sr. #	Ans.	Sr. #	Ans.
29	**B**	36	**D**	43	**D**	50	**A**
30	**A**	37	**B**	44	**C**	51	**B**
31	**B**	38	**A**	45	**C**	52	**C**
32	**B**	39	**D**	46	**B**	53	**C**
33	**B**	40	**C**	47	**B**	54	**C**
34	**A**	41	**A**	48	**C**	55	**C**
35	**B**	42	**D**	49	**B**	56	**B**

National Vocational and Technical Training Commission (NAVTTC)

Plot 38, Kirthar Road, Sector H-9/4, Islamabad, Pakistan
+92 51 9044 322
+92 51 9044 322
info@navttc.org
www.navttc.org