INTEGRATED CERTIFICATE CUM DIPLOMA PROGRAMME (ICD)

QUALIFICATION PACKS (QP)
AND

SUMMER TRAININGS

(APPLICABLE FOR STUDENTS ADMITTED FROM THE ACADEMIC YEAR 2024-2025 ONWARDS)

SANT LONGOWAL INSTITUE OF ENGINEERING & TECHNOLOGY
***(DEEME- to-be -UNIVERSITY),* Established by Govt. of India,**

LONGOWAL, DISTT. SANGRUR (PUNJAB)

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QUALIFICATION PACKS (QP) AND SUMMER TRAININGS

Criteria of ICD curriculum restructuring

The Academic Year is divided into two regular terms (excluding the industrial training). Each term of nearly eighteen weeks is known as a semester. The program of study consists of prescribed courses that are sequentially distributed among relevant semesters. The system of examination is internal and is based upon continuous evaluation. This system inculcates the punctuality and hard work among the students and consequently reduces the percentage of failures. At the end of a semester the semester transcripts indicating the performance of the students are prepared and issued to the students.

Background: The ICD program has been designed to impart technical and practical knowledge and know-how to the students. The course curriculum has been dividing into two parts:

i) Main part covers the main courses including theory and practical which has been designed to impart the highest level of education in latest technological streams to produce competent technical & supervisory level manpower which act as a role model of certificate and diploma level educational institutions in the country and inculcate the concept of intellectual skills, courage and integrity, awareness and sensibility to the technical needs and aspirations of the rural/urban societies and industries.

ii) The other part of the course curriculum covers the industrial oriented technical qualification packs. The purpose emphasizes the need to impart educational training and other criteria required to perform a job role. The qualification packs cover the technical knowledge which imparts specific knowledge needed to accomplish specific designated responsibilities. Core Skills or Generic Skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the occupational standards, these include communication related skills that are applicable to most job roles. The occupational standards specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts. Performance Criteria elaborate the specify standard of performance required when carrying out a task. The Occupational Standards uniquely applied in the Indian context, include the knowledge and understanding statements which together specify the technical, generic, professional, and organizational specific knowledge that an individual needs to perform to the required standard. Organizational Context included in the quality packs understand the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.

Course Code	Qualification Pack	L	T	P	H	Cr
QPFT-101	Basic Good Manufacturing Practices in Food Industry (Lerner-I)			8	8	01

Brief Job Description: The BGMP learner gain knowledge of importance of GMP in the food and allied industries. Can demonstrate GMP principle, objectives, and key requirements.

Personal Attributes: A Basic Good Manufacturing Practices Lerner in Food Industry can elaborate the basic aspects of good practices in production/manufacturing, aspects of good practices in quality control and general and specific requirements for documentation and records keeping.

Good Manufacturing Practice or GMP is a set of quality assurance practices promoted by regulatory authorities (including the WHO and US FDA) to ensure manufacturing processes are rigorously set and monitored. This training is designed to help you implement into an organization the increasing legislation and guidance on goods within the manufacturing industry.

Elements and Performance Criteria:

PC1) GMP meaning and overview, The main risk, GMP importance, GMP Directives, GMP Requirements

1) What are Good Manufacturing Practices?
2) What does GMP mean in the food industry?
3) When was GMP introduced?
4) What is GMP main objective and importance?
5) What are the benefits of GMP?
6) What is GMP classification?
7) Who issued GMP in India?
8) Who regulates GMP in India?

PC2) GMP and the quality System: Quality system, principle, and overview

1) Why quality is important in GMP?
2) What is current GMP?
3) What are the 5 main components of good manufacturing practice?
4) What are the 10 basic principles of GMP?
5) What are GMP standards?
6) What are the principles of GMP?
7) What are the key elements of GMP?
8) What are the 10 rules for safe food practice?
9) What are 5 food safety practices?

10) What are the 3 main risk of food hazard?
11) How Good Manufacturing Practices Deal with contamination.

PC3) GMP and Personal: Personal and principle, key and qualified personal, responsible distributers, Staff training and hygiene

1) How GMP covers General Employee Hygiene
2) GMP and food-handling environment
3) How do we prevent contamination?
4) What food handlers must take care of and be aware of
5) What is PPE in food industry and its types?
6) What is basic PPE for kitchen?
7) What are the 4 levels of **Personal protective equipment** (PPE)?
8) What is the 5-point PPE?
9) What are the 4 categories of PPE?
10) What are 6 PPE examples?

PC4) Premises and equipment: Production area, storage area, quality control and ancillary area

storage

1) How many types of GMP are there?
2) Is GMP required for food industry?
3) What are 8 GMPs categories?
4) Seven simple steps to manufacturing success
5) GMP for Receiving and Storage
6) GMP for Maintenance and Repairs
7) GMP for Building & Facilities
8) Personal hygiene in food production
9) GMP for Establishment : maintenance & sanitation

PC5) Documentation: Principle, Generation, control and type of documentation, Manufacturing formula and processing instructions

Course Code	Qualification Pack	L	T	P	H	Cr
QPFT-102	Good Manufacturing Practices in Food Industry Lerner-II	0	0	8	8	01

Brief Job Description: The GMP learner can attain the elaborative knowledge of GMP in the food and allied industries. Can demonstrate GMP activities, functions and practices.

Personal Attributes: A **Good Manufacturing Practices in Food Industry Lerner** can elaborate the role of Production, Quality Control (QC), Quality Assurance (QA) and the Qualified Person (QP) in GMP, will be able to handle complaints and recalls and can learn key considerations in GMP auditing with specific requirements for documentation and records keeping.

GMP compliance is widely accepted as the best way to conduct business, putting product quality first. The course is aimed principally at personnel occupying supervisory and management roles who need detailed explanation of GMP, requirements of GMP and how it works. The GMP course will also be of benefit anyone in the manufacturing (including food, food packaging and food packaging manufacturing) and industries who have no significant GMP training.

Elements and Performance Criteria:

PC1) Production: Principles, Prevention of cross contamination in production, Storage materials and processing operations. Packaging operations

1) Basic requirements of Production employees
2) GMP for Primary production
3) GMP for equipment, containers, and utensils
4) What are 3 main types of manufacturing?
5) What are the 5 stages of manufacturing?
6) What are the 7 main areas to do with the management of operations in the manufacturing and service sectors of the economy?
7) How is GMP related to HACCP?
8) Is GMP part of HACCP?
9) Is GMP the same as HACCP?
10) What are the 7 categories of HACCP?
11) Why is GMP important in HACCP?
12) What are the 5 basic food safety rules?
13) What are the 5 golden rules of food safety?
14) What are the 10 rules for basic food safety practices?
15) What is 5S in food industry?
16) What is GHP in HACCP?
17) What is GMP in food packaging?

PC2) **Quality control**: Principles, QC tasks, QA, technical transfer of testing material

1) How do you maintain food quality?
2) What is difference between GMP and quality?
3) How can a GMP prevent contamination?
4) What is GMP in food safety?
5) What are the 7 important things to keep food safe?
6) GMP for Raw Material, Packaging Material and Finished Product Testing
7) What are the 6 principles of food safety?
8) Why is food safety and GMP important?
9) What are the risks of GMP?
10) GMP for Quality Control Department
11) What is SOP in food industry?
12) What are 4 M of GMP?
13) What are 15 kitchen safety rules?
14) What is high risk food?
15) What are types of food hazards?
16) What are the 20 safety rules?

PC3) **Complaints and recalls**: Samples, complaints. classifications of defects, recalls.

1) GMP for Samples,
2) GMP and Consumer information decimation and action,
3) Rejection of product and complaints handling in GMP

PC4) **GMP audit**: Consideration for GMP audits, Course assessment

PC5) **Documentation**: Principle; Generation, control and type of documentation, Manufacturing formula and processing instructions

Course Code	Qualification Pack	L	T	P	H	Cr
QPFT-201	Food Grain Milling	0	0	8	8	01

Brief Job Description: A **QP in Food Grain Milling** includes the milling of all types of grains such as rice, wheat, pulses, etc. to achieve the desired quality and quantity of products while maintaining food safety and hygiene in the work environment.

Personal Attributes: A **QP in Food Grain Milling** holder must have the ability to plan, organize, prioritize, calculate, concentrate, and handle pressure. The individual must possess reading, writing and communication skills. In addition, the individual must have mechanical aptitude and trouble shooting skills.

Food standards for grains and flour. Milling of various food grains. Food handling, packaging, and storage techniques. Quality assessment of raw material, packaging material and finished products. Waste Management. Operation and maintenance of milling machineries and equipments. Training in Food Safety Standards and Regulations (as per FSSAI)

Occupational Standards (OS)

a) OS-Prepare and maintain work area and process machineries for execution of the grain milling process:

Elements and Performance Criteria:

PC1. Clean and maintain the cleanliness of the work area using approved sanitizers and keep it free from dust, waste, flies and pests.

PC2. Ensure that the work area is safe and hygienic for food processing.

PC3. Dispose waste materials as per defined SOPs and industry requirements

PC4. Check the working and performance of all machineries and tools used for the food grain milling process such as de-stoner, separator, de-husker, splitter, whitener, polisher, blender, pulverizer, stone mill / roller mill, plansifter , packaging machines, etc

PC5. Clean the machineries and tools used with recommended sanitizers following the company specifications and standards

PC6. Place the necessary tools required for process

PC7. Place the tools in accessible location to attend to minor repairs/faults of all machines, if required

b) OS-Grain milling

Elements and Performance Criteria:

PC1. Clean process machineries with recommended sanitizers following SOP

PC2. Ensure working and performance of each machinery and equipment required for milling process

PC3. Clean and change screens/sieves in process machineries (as applicable) following SOP for milling different types of grains to produce various type of products

PC4. Set the process parameters of all processing machineries, start machines to ensure working and performance

PC5. Adjust/reset process parameters during changeover of raw materials or for production of various types of products

PC6. Maintain and manage machineries, equipment and tools in required condition

PC7. Clean and lubricate equipment on regular or need basis, following the maintenance specifications of the organization

PC8. Carry out daily maintenance of all milling machineries, equipments and tools as per the supplier manual and organisation standards

PC9. Organize and keep the tools accessible to attend repairs/faults in case of breakdown

PC10. Assist in dismantling and assembling of machineries while cleaning, maintenance and handling repairs

PC11. Escalate any malfunctions or repair of milling machineries (beyond own scope of work) to the concerned person

PC12. Implement suggested corrective actions immediately

PC13. Organize grains from warehouses and maintain enough stock to meet weekly production requirement

PC14. Receive raw materials from external or internal warehouse following sop

PC15. Check the quality of incoming raw materials through physical parameters like appearance, colour, visual defects, odor, infestation etc

PC16. Sample incoming raw materials and transfer to quality lab for analysis, ensure transfer of grains into specified silos and store following sop

PC17. Check the stored grains periodically for any infestation and arrange for immediate fumigation and implement other suggested corrective action

PC18. Ensure implementation of pest control for warehouse, loading and unloading area, process and storage area etc

PC19. Check control points of process area and milling machineries to ensure performance, hygiene and safety working condition

PC20. Read and understand work order/production order and process flow chart

PC21. Ensure specified quantity and variety of raw materials are moved from warehouse/silos and blended

PC22. Set, monitor and control process parameters like flow rate of raw material and air, speed, rotation etc of grain cleaning machineries like de - stoner, separator, scourer, aspirator etc for removal of stones straw, sticks, mud, light particles/husk, foreign materials etc

PC23. Open, adjust and close raw material feed chute to allow specified quantity of raw material into processing machineries for process

PC24. Set, monitor and control process parameters like flow rate/intake of raw materials, oil, water to maintain moisture content or oil content, temperature, pressure, process time etc for steaming (or) condition/soaking , tempering of grains like paddy (rice), legumes (pulses/dhal), wheat etc

PC25. Set, control and maintain process parameters like raw material flow rate, speed, time etc of rice processing machines like paddy husker, paddy separator, whitener, sifter, polisher, length grader, sortex, blender machine to remove husk and produce brown rice, separate unhusked paddy from brown rice, remove bran and germ from brown rice, remove impurities and brokens, improve appearance of rice, separate rice based on length, electronic colour sorting, blend rice of various grades to meet customer and legal requirement

PC26. Set, control and maintain process parameters like material flow rate, speed, time etc of pulse processing machines like abrasive huller with aspirator, splitter, sifter, polisher, grader, sortex, blender machines to remove hull and produce dehusked legume, to split legume and produce dhal, remove impurities and chips, improve appearance of dhal, separate dhal based on size, electronic colour sorting, blend pulse of various grades to meet customer and legal requirement

PC27. Set, control and maintain process parameters like material flow rate, speed, rotation, time, moisture content etc of wheat processing machineries like tempering bins/conveyors, roller mill, plansifter, purifier to mix wheat with specified amount of water to achieve desired moisture content, grind wheat, sieve wheat flour to required fineness, electronic colour sorting to remove undesirable dark specks from semolina (sooji/rava)

PC28. Open valves, adjust controls, control speed of conveyor to maintain flow of material to and from each processing machineries to maintain production requirements and achieve continuous processing

PC29. Stop process machineries in case of any breakdown or emergency situation with proper approvals, attend break down/repairs/faults (or) inform maintenance team and ensure immediate maintenance to reduce downtime and meet the production target

PC30. Collect in -process samples and transfer to quality lab for analysis, conducts in - process tests like grain moisture content to monitor product quality during processing

PC31. Identify products, process and equipment performance non - conforming to specification and standards, rectify or report, and implement suggested corrective action immediately

PC32. Collect machine rejects and waste generated from each process, use (e.g. use bran in boiler) or dispose following sop

PC33. Load packing materials in packaging/bagging machine and set packing quantity, set date coding machine for date code details like batch number, date of manufacture, date of expiry etc

PC34. Start automatic packaging/bagging machine to fill and seal (or) form, fill and seal measured quantity of finished products, check weight of packed/bagged product periodically to ensure its conformance to standards

PC35. Sample packed product and transfer to quality lab for analysis and to ensure its conformance to quality standards

PC36. Place packed and labelled products in cartons/other secondary packaging material and seal, transfer to storage area and store maintaining storage conditions following sop

PC37. Report discrepancies/concerns to department supervisor for immediate action

PC38. Clean the work area, machineries, equipment and tools using recommended cleaning agents and sanitizers

PC39. Attend minor repairs/faults of all machines (if any)

PC40. Ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment following the SOP or following suppliers instructions/manuals

c) OS-Complete documentation and record keeping related to execution of the grain milling process

Elements and Performance Criteria:

PC1. Document and maintain records on details of raw materials and packaging materials like name of raw materials, type and variety, vendor/supplier details, grown season, grown area, quantity, receiving date, receiving date/ date of manufacture, expiry date, supplier quality document, quality parameters of all raw materials, internal quality analysis report etc, as per organisation standards

PC2. Document and maintain record on observations (if any) related to raw materials and packaging materials

PC3. Load the raw materials details in erp for future reference

PC4. Verify the documents and track from finished product to raw materials, in case of quality concerns and during quality management system audits

PC5. Document and maintain records on production plan with details like the product details, production sequence, equipments and machinery details, efficiency and capacity utilization of equipment

PC6. Document and maintain records on process details like type or raw material used, process parameters (like temperature, time etc as applicable) for entire production in process chart or production log for all products produced

PC7. Document and maintain records on batch size, production yield, and wastage of raw materials, energy utilization and final products produced

PC8. Document and maintain records on observations (if any) or deviations related to process and production

PC9. Load the production plan and process details in erp for future reference

PC10. Verify documents and track from finished product to ingredients, in case of quality concerns and for quality management system audits

PC11. Document and maintain records on the types of finished products produced

PC12. Document and maintain records on the finished products details like batch number, time of packing, date of manufacture, date of expiry, other label details, primary, secondary and tertiary packaging materials for all finished products, storage conditions etc, as per organisation standards

PC13. Document and maintain record on observations or deviations (if any) related to finished products

PC14. Load the finished product details in erp for future reference

PC15. Verify the documents and track from finished product to ingredients, in case of quality concerns and for quality management system audits

d) OS-Food safety, hygiene and sanitation for processing food products

Elements and Performance Criteria:

PC1. Comply with food safety and hygiene procedures followed in the organisation

PC2. Ensure personal hygiene by using of gloves, hairnets, masks, ear plugs, goggles, shoes, etc.

PC3. Ensure hygienic production of food by inspecting raw materials, ingredients, finished products, etc. for compliance to physical, chemical and microbiological parameters

PC4. Pack products in appropriate packaging materials, label and store them in designated area, free from pests, flies and infestations

PC5. Clean maintain and monitor food processing equipment periodically, using it only for specified purpose

PC6. Use safety equipment such as fire extinguisher, first aid kit and eye-wash station when required

PC7. Follow housekeeping practices by having designated area for materials/tools

PC8. Follow industry standards like GMP and HACCP and product recall process

PC9. Attend training on hazard management to understand types of hazards such as physical, chemical and biological hazards and measures to control and prevent them

PC10. Identify, document and report problems such as rodents and pests to management

PC11. Conduct workplace checklist audits before and after work to ensure safety and hygiene

PC12. Document and maintain raw material, packaging material, process and finished products for the credibility and effectiveness of the food safety control system

PC13. Determine the quality of food using criteria such as aroma, appearance, taste and best before date, and take immediate measures to prevent spoilage

PC14. Store raw materials, finished products, allergens separately to prevent cross contamination

PC15. Label raw materials and finished products and store them in designated storage areas according to safe food practices

PC16. Follow stock rotation based on FEFO / FIFO

d) OS-Manage and lead a team

Elements and Performance Criteria:

PC1. Ensure that the team is aware of the schedule and job expectations on a daily basis

PC2. Involve the team in regular meetings to communicate information intended for them

PC3. Ensure communication to the team on any changes in policies/ processes by the organization through required verbal/ written mechanisms

PC4. Ensure participation of the team in various engagement initiatives organized by the organization

PC5. Counsel and address issues among the team for any work related issues

PC6. Support the manager in deployment of the team as per production schedule and the organizational norms and guidelines

PC7. Ensure periodic training of the team and support the team by delivering trainings

PC8. Share knowledge of processes, techniques and products with the team to enhance their skill levels

PC9. Provide feedback to the manager pertaining to performance of the team

Course Code	Qualification Pack	L	T	P	H	Cr
QPFT-202	**Milk & Milk Products**	0	0	8	8	**01**

QP in Milk & Milk Products means any person who takes samples of milk or cream, milk products such as butter, ghee ice cream etc. or fluid derivatives thereof, on which sample tests are to be made as a basis of payment, or who grades, weighs, or measures milk or cream or the fluid derivatives thereof, the grade, weight, or measure to be used as a basis of payment, or who operates equipment wherein milk or products thereof are pasteurized.

Brief Job Description
A **QP in Milk & Milk Products** include the testing and ensuring quality of milk and its products procured from each individual producer and prepared in the plant/dairy.

Personal Attributes

A **QP in Milk & Milk Products** holder should have the ability to plan, organize and prioritize the work related to product testing, product sampling, handling, product testing and quality control. The individual must possess reading, writing and communication skills. In addition, the individual must have personal and professional hygiene. S/he must understand food safety standards and requirements.

Occupational Standards (OS)

a**) OS-Prepare and maintain work area and equipments for milk testing**

Description
This OS unit is about preparing work area for hygiene and safety, and ensuring performance, efficiency and maintenance of laboratory equipments and tools, for milk testing, as per the specifications and standards of the organization.

Scope
The scope of this role will include:

Elements and Performance Criteria: *Prepare and maintain work area (for milk testing).* To be competent, the user/individual on the job must be able to:

PC1. clean and maintain the cleanliness of the work area using approved sanitizers and keep it free from dust, waste, and spillage
PC2. ensure that the work area is safe and hygienic for milk analysis and testing
PC3. prepare a cleanliness checklist and ensure that all points are covered before starting the quality tests
PC4. dispose waste materials as per defined SOPS and industry requirements

Prepare and maintain lab equipments and tools (for milk testing)

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

PC5. check the working and performance of all equipments and tools used for process such as
weighing scales, PH meter, lactometers, moisture analyser, sterilizer, flasks, refractometer, TDS (total dissolved solvents) meter, equipments for testing containers, etc.
PC6. clean the equipments and glass wares used with recommended sanitizers following specifications and organisation standards
PC7. organize glass wares and equipments for analysis

b) OS-Prepare for quality analysis and manage housekeeping for milk testing

Description

This OS unit is about preparation for quality analysis of milk through calibration of equipments and preparing reagents and managing housekeeping as per the specifications and standards of the organization

Scope
The scope of this role will include:

Elements and Performance Criteria:

i) *Calibrate and maintain equipments (for milk testing).*
To be competent, the user/individual on the job must be able to:

PC1. handle and maintain tools (dead weights, calibrated measuring jars) and reagents (standard solutions) used for calibration of equipments following laboratory procedures and standards
PC2. read and understand the standard operating procedures (sop) for calibration of each equipment
PC3. record the reading in the calibration register
PC4. maintain list of all equipments along with its calibration frequency
PC5. maintain record/file of external calibration reports
PC6. check the working and performance of all equipments on regular basis
PC7. report any malfunction/repairs to the supervisor
PC8. inform the supplier/manufacturer on the malfunction/repairs and get it repaired immediately
PC9. maintain list of all equipments along with the details of annual maintenance contract
PC10. record all details on lab equipment like performance, faults, repairs, annual maintenance etc in the equipment register and in ERP.

ii) Prepare reagents (for milk testing)

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

PC11. read and understand the SOPs for preparing each reagent
PC12. ensure availability of distilled water and standard solutions at all times
PC13. weigh required chemicals and measure solvents in calibrated instruments and measuring jars

PC14. mix solvents and chemicals and maintain required conditions following the procedure for preparing the reagents
PC15. prepare standards solutions for calibration of equipments
PC16. store the chemicals, solvents, acids, reagents etc following manufacturers instructions (from the label) or following laboratory procedures and standards
PC17. ensure and maintain inventory of all lab chemicals, glass wares, consumables, equipment spares etc
PC18. maintain list of all chemicals, solvents, acids, reagents, glass wares, consumables, equipment spares etc used in the laboratory
PC19. check the inventory of lab chemicals, glass wares, consumables, equipment spares at regular intervals in the register and erp and update lab technician on the inventory status
PC20. prepare purchase requisition for lab chemicals, glass wares, consumables, equipment spares with the approval of superiors, and process requisition
PC21. clean the glassware used for analysis with recommended detergents, disinfectants and sanitizers
PC22. clean and maintain equipments used following the maintenance procedures for equipments

iii) Manage housekeeping (for milk testing)

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

PC23. read and understand the SOP and checklist for housekeeping.
PC24. visit the processing unit (procured milk, milk at various stages), process/production area, transportation area, transportation vehicle, laboratory at regular intervals and perform checks based on the housekeeping checklist.
PC25. inform the supervisor in case of any deviation.
PC26. understand the suggested corrective action
PC27. ensure to implement the corrective action immediately.
PC28. file the housekeeping checklist
PC29. maintain records on all documents related to the housekeeping activity

c) OS-Sampling and quality analysis for milk testing

Description
This OS unit is about sampling and quality analysis of procured milk as per the specifications and standards of the organization

Scope

The scope of this role will include:
Sample for quality analysis for milk testing, Quality Analysis of samples

Elements and Performance Criteria

i) Sample for quality analysis for milk testing

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

PC1. sample the procured milk (milk procured directly from farmers) from the delivery truck/warehouse/storage area following SOP.
PC2. sample the finished milk and milk product(s) from the milk collection center or production storage area/warehouse
PC3. collect the pre-shipment samples sent by the milk producers/milk product vendors from MCC or processing unit
PC4. ensure that the liquid milk in cans and bulk tanks is thoroughly mixed to disperse the milk fat before a milk sample is taken for any chemical control test
PC5. use plungers and dippers to take out the sampling milk from milk cans
PC6. ensure that the dippers used to take the sampling milk has been sterilized in an autoclave or pressure cooker for at least 15 mm at 120 degree celcius before hand in order to avoid
contamination of the sample
PC7. label the samples with details like name of farmer/milk producer, records of dates and place of procurement
PC8. cool the sample to near freezing point quickly and keep it cool till the quality testing begins
PC9. collect all documents pertaining to incoming lab samples like copy of procurement order,
invoice, certificate of analysis etc for verification and records
PC10. transfer the samples to milk and place in the designated area for analysis
PC11. verify the certificate of analysis (COA) against organisation standards
PC12. file and maintain all documents related to sample along with the test report
PC13. monitor and maintain the storage conditions (like temperature, humidity, cleanliness etc) of the control sample
PC14. dispose the control sample and shelf-life sample after the control period following disposal procedures and as per organisation standards

ii) Quality analysis of samples

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

PC15. read and understand the standard operating procedures (SOP) for analysis of each sample
PC16. carry out analysis in calibrated equipments following standard operating procedure
PC17. perform basic tests on physical parameters like colour, appearance, texture, weight etc on milk and milk product samples collected
PC18. perform basic chemical analysis like moisture content, bulk density, ph, total soluble solids (TSS) using refractometer, etc on milk. equipment used: electronic milk tester/milk analyser (testing %fat & %snf), weighing scale, adulteration testing machine, adulteration kit, gerber centrifuge, lactometer, etc for ensuring raw milk quality
PC19. inform the supervisor of any discrepancies in the analysis result
PC20. record the results in the quality analysis register
PC21. enter the results in the ERP system (in case a computerized system is used)
PC22. clean the glassware used with recommended detergents, disinfectants and sanitizers
PC23. clean and maintain equipments used, following maintenance procedures for equipments

d) OS-Complete documentation and record keeping related to milk testing

Description

This OS unit is about documenting and maintaining records of sampling and analysis of procured milk, containers, equipment calibration and regulatory requirements, for performing milk testing.

Scope

The scope of this role will include:

Document and maintain records of procured milk and containers. Document and maintain records of equipment and calibrations.

Elements and Performance Criteria

i) Document and maintain records of procured milk and containers

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

PC1. document and maintain records of procured milk and containers sampled such as sampling procedure, supplier information, receiving date/date of procurement, condition of the

transport vehicle, condition of procured milk

PC2. document and maintain records on procured milk and container analysis such as parameters analyzed, method of analysis, tests performed on the milk, storage of sample, equipments used for analysis, analysis results, certificate of analysis

PC3. maintain record of observations (if any) related to procured milk and containers

PC4. load the analysis details in ERP for future reference (in case a computerized system is used)

ii) Document and maintain records of equipment and calibrations

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

PC5. document and maintain records on equipments used for analysis, condition of the equipment, control used for analysis, equipment parameter, equipment performance, time taken for analysis, etc. as per company standards

PC6. document and maintain records of equipment calibration such as date of calibration, procedure and method used for calibration, errors/variations observed, calibration readings, internal and external calibration reports, reagents/standards/tools used for calibration condition of the equipment, etc. as per company standards

PC7. maintain record of observations or deviations (if any)

PC8. load the details in ERP for future reference

e) Safety, hygiene and sanitation for milk testing

Description

This OS unit is about maintaining safety, hygiene and sanitation in work area and processing unit for milk testing

Scope

The scope of this role will include:

Elements and Performance Criteria

i) Perform safety and sanitation related functions (for milk testing)

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

PC1. comply with safety and hygiene procedures followed in the organisation
PC2. ensure personal hygiene by use of gloves, hairnets, shoes, etc.
PC3. ensure hygienic production of milk by inspecting procured milk for compliance to physical, chemical and microbiological parameters
PC4. clean, maintain and monitor milk processing equipment periodically, using it only for the
specified purpose
PC5. use safety equipment such as fire extinguisher, first aid kit and eye-wash station when required
PC6. follow housekeeping practices by having designated area for materials/tools
PC7. attend training on hazard management to understand types of hazards such as physical, chemical and biological hazards and measures to control and prevent them
PC8. identify, document and report problems such as rodents and pests to supervisors
PC9. conduct workplace checklist audits before and after work to ensure safety and hygiene
PC10. document and maintain procured milk, container and process for the credibility and effectiveness of the dairy safety control system

ii) Apply safety practices (for milk testing)

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

PC11. determine the quality of milk using criteria such as odour, appearance, taste and best before date, and take immediate measures to prevent spoilage
PC12. store procured milk and allergens separately to prevent cross-contamination
PC13. label procured milk and store them in designated storage areas according to safe food practices

Course Code	Qualification Pack	L	T	P	H	Cr
QPFT-301	**Bakery and Confectionery**	0	0	8	8	**01**

Brief Job Description: A **QP in Bakery and Confectionery** includes production and supervision of the baked products (breads, biscuits, cakes, etc.) in industrial units by weighing, mixing, kneading, fermenting, shaping, rolling/sheeting, cutting, moulding, baking, cooling, etc. using various industrial equipment.

Personal Attributes: A **QP in Bakery and Confectionery** holder should have the ability to plan, organize, prioritize, calculate and handle pressure. S/he must possess reading, writing and communication skills. In addition, the individual must have stamina to be able to stand for long hours, have personal and professional hygiene and an understanding of food safety standards and requirements.

Occupational Standards (OS)

a) OS-Prepare and maintain work area and process machineries for producing baked products in industrial units

Description This unit is about preparing work area ensuring hygiene and safety, checking the performance and efficiency of process machineries and tools for producing baked products in industrial units, as per the specifications and standards of the organization.

Scope This unit/task covers the following: Prepare and maintain work area (for production of baked products in industrial units), Prepare and maintain process machineries and tools (for production of baked products in industrial units)

Element Performance Criteria

i) Prepare and maintain work area (for production of baked products in industrial units)

PC1. clean and maintain the cleanliness of the work area using approved sanitizers and keep it free from dust, waste, flies and pests
PC2. ensure that the work area is safe and hygienic for food processing
PC3. dispose waste materials as per SOP and industry requirements

ii) Prepare and maintain process machineries and tools (for production of baked products in industrial units)

PC4. check the working and performance of all machineries and tools used for production such as weighing scales, mixer/ kneader, dough divider, dough rounder, dough moulder, sheeting machine, rotary cutter, dough depositor, baking oven, packaging machines, etc.
PC5. clean the machineries and tools used with approved sanitizers following specifications and SOPs
PC6. place the necessary tools required for the process
PC7. attend minor repairs/ faults of machines, if required

b) OS-Prepare for production of baked products in industrial units

Description This unit is about preparation of raw materials and machineries for production of various baked products in industrial units.

Scope The scope of this role will include: Prepare raw materials for production (for baked products in industrial units), Prepare machineries for production (for baked products in industrial units)

Element Performance Criteria
i) Prepare raw materials for production (for baked products in industrial units)

PC1. read and understand the production order
PC2. refer to the process chart/ product flow chart/formulation chart for the product(s) to be produced
PC3. organize raw materials and ingredients required for production of products in the work order
PC4. check the quality documents from supplier/internal lab for each raw materials and ingredient required for products to be produced, for its conformance to organization standards
PC5. check the quality of raw materials and ingredients through physical parameters such as appearance, colour, aroma texture, etc.

iii) Prepare machineries for production (for baked products in industrial units)

PC6. check and ensure the cleaning and maintenance of the machineries required for production
PC7. calibrate equipments such as weighing scale following methods defined by the organization
PC8. change dies, moulds, blades and other parts of machineries, if required
PC9. start each machine and check and ensure its working and performance
PC10. make minor adjustments or repairs (if required)
PC11. keep tools accessible to attend repairs/faults in case of breakdown
PC12. allot responsibilities/ work to the assistants and helpers

c) OS-Produce baked products in industrial units

Description This unit is about supervising and controlling the production of various baked products in industries using continuous processing machineries or automated machineries, as per the specifications and SOP's.

Scope The scope of this role will include: Weigh and mix ingredients, Fermentation, moulding and proofing dough(for bread), Roll, shape and cut dough (for biscuits), Mould cake batter, Bake and pack baked products, Post production cleaning and regular maintenance of equipments

Element Performance Criteria

i) Weigh and mix Ingredients

PC1. refer the production order and formulation for the product/SKU, and organize all the ingredients required for the product/batch

PC2. check the quality of each ingredient through physical parameters such as appearance, colour, odour, texture etc. for its conformance to standards and specifications
PC3. set and control metering devices that measure each ingredient as per the formulation, and check the scale indicators to confirm if the specified amount of ingredients have been added
PC4. start flour sifter and pre-mixer to blend ingredients
PC5. transfer all the ingredients together or sequentially into the mixing machine, and set the mixer speed, time and temperature depending on the mixing process, following the SOP
PC6. start the mixing machine to knead/mix the ingredients and observe dials and recording instruments to verify dough temperature, viscosity of batter, speed and time of mixing
PC7. check and feel the dough/batter to ascertain its consistency meets the standard, and unload dough/ batter in the trough/ hopper

ii) Fermentation, moulding and proofing dough (for bread)
PC8. set and maintain temperature, humidity of fermentation chamber/room, transfer dough into fermentation chamber/room and allow to stand for specified time for fermentation
PC9. check the fermented dough at regular intervals for required consistency
PC10. transfer the fermented dough into the mixer for second stage mixing following the SOP, set the speed and time of the mixer and start to mix the fermented dough
PC11. transfer the dough into the trough/ hopper and load the dough onto the dough divider and adjust controls to set speed of the divider and start divider blades that cut off specified weight of dough and drop onto the conveyor
PC12. set and control the speed of the divider conveyor that pass the dough through the line that shapes the dough into balls, dust with flour and transport the shaped dough to the moulder conveyor without sticking
PC13. weigh the dough balls at regular intervals to check its conformance to standards
PC14. load or ensure loading (by helpers) of specified size baking moulds/ pans on the panning conveyor and ensure that speed of the moulder and conveyor are synchronised to allow smooth passage of dough
PC15. allow the dough to pass through moulding line that fold and roll the dough to desired shape and allow the shaped dough to arrange in the baking moulds/ pans passing on the panning conveyor
PC16. set and control the speed of the conveyor that take the moulded dough into the proofer and turn controls to set the temperature, relative humidity of the proofer following the SOP
PC17. monitor the proofed dough passing out of the proofer to confirm it has rise to specified height

iii) Roll, shape and cut dough (for biscuits)

PC18. load the dough trough containing dough, in the elevator and start the elevator to lift the dough trough and dump the dough in the dough feeder (if dough feeder is in the elevated position)
PC19. set the controls of each roller of the laminator machine and start the machine to produce continuous sheet of dough
PC20. set the controls of rotary cutter machine to cut the sheet of dough to desired size, shape and design and set the controls of the separating machine to separate the cut dough and control scrap return
PC21. observe operation of laminator, rotary cutter and separating machine, and remove malformed biscuit shapes and control scrap return

PC22. load topping materials like salt, sugar, choco chips etc in sprinkler machine following the SOP for the product/SKU and set the controls of the machines to sprinkle measured quantity of topping material over the cut dough

iv) Mould cake batter

PC23. prepare the baking pans by placing the paper liners in the moulds of the baking pans
PC24. adjust controls of the batter depositor machine to fill measured quantity of batter into the moulds of baking pans
PC25. start the conveyor and control speed such that the moulds of the baking pans are positioned below the filling nozzle of the batter depositor machine
PC26. start machine to pump measured quantity of batter into the moulds of the baking pans
PC27. fill the topping materials such as fruits, nuts, chocolate chips, etc. in the topping machine following the SOP for the product/SKU and start the topping machine to deposit measured quantity of topping materials on the batter in the baking pans PC28. check the weight of the filled moulds at regular intervals to ensure its conformance to standards

v) Bake and pack baked products

PC29. set the oven parameters such as baking temperature, baking time, speed of the panning conveyor etc., and monitor and control the dough/batter filled baking pans entering the oven (tunnel oven)
PC30. observe baking of products through the observation window of the tunnel oven and monitor the oven parameters during the entire baking process
PC31. observe the product coming out the oven for its quality through physical parameters such as colour, aroma, texture etc. to detect burning /over baking/under baking and accordingly control oven parameters to achieve finished product of uniform quality, and remove the non-conforming products from the conveyor
PC32. check the quality of the finished products (bread, biscuit and cake) through physical parameters such as colour, size, appearance, texture, aroma, etc. and compare against standard
PC33. control the vacuum system that remove the baked product from the baking moulds/ pans through suction
PC34. set, control and maintain speed of the cooling conveyor and fans to cool the finished products and ensure the products are cooled to the required temperature
PC35. check the weight of finished product periodically and ensure its conformance to standards
PC36. adjust controls of the conveyor and slicer to allow the bread loaves/cakes to pass though slicer and ensure it is cut to required thickness
PC37. adjust controls to allow the finished products to move to the automatic packaging machine
PC38. sample the packed product and transfer to quality lab for analysis
PC39. report discrepancies/concerns in each stage of production to department supervisor for immediate action

vi) Post production cleaning and regular maintenance of equipment
PC40. clean the work area, machineries, equipment and tools using recommended cleaning agents and sanitizers
PC41. attend minor repairs/faults of all machines (if any)

PC42. ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment following the SOP or following suppliers instructions/manuals

d) OS- Complete documentation and record keeping related to production of baked products in industrial units

Description

This unit is about documenting and maintaining records of raw materials, process and finished products for baked products in industrial units.

Scope

This unit/task covers the following: Document and maintain records of raw materials (for production of baked products in industrial units), Document and maintain record of production schedule and process parameters (for production of baked products in industrial units), Document and maintain record of finished products (for production of baked products in industrial units)

Element Performance Criteria

i) Document and maintain record of raw material (for production of baked products in industrial units)

PC1. document and maintain record of details of all raw materials used such as names of raw materials, supplier details, receiving date/ date of manufacture, expiry date, supplier quality document, quality parameters for all raw materials, internal quality analysis report, etc., as per organization standards

PC2. maintain record of observations (if any) related to raw materials and packaging materials

PC3. load the raw material details in computer or in the ERP system followed by the organization for future reference

PC4. verify the documents and track from finished product to raw materials, in case of quality concerns and during quality management system audits

ii) Document and maintain record of production schedule and process parameters (for production of baked products in industrial units)

PC5. document and maintain records of production details such as the product produced, production sequence, equipment and machinery details, efficiency and capacity utilization of equipment, etc.

PC6. document and maintain records of process details such as type of raw material used, process parameters (temperature, time etc. as applicable) for the entire process in process chart or production log for all products produced

PC7. document and maintain record of batch size, raw material used, yield after each stage of process, wastage, energy utilization and final products produced

PC8. maintain record of observations or deviations (if any) related to production and process parameters

PC9. load the production and process parameter details in computer or in the ERP system followed by the organization for future reference PC10. verify documents and track them

from finished product to raw materials, in case of quality concerns, and during quality management system audits

iii) Document and maintain records of the finished products (for production of baked products in industrial units)

PC11. document and maintain records of the types of finished products produced
PC12. document and maintain records of finished products details such as name of the product, batch number, time of packing, date of manufacture, date of expiry, other label details, primary and secondary packaging materials for all finished products, storage conditions, etc., as per organization standards
PC13. maintain record of observations or deviations (if any) related to finished products
PC14. load the finished product details in computer or in the ERP system followed by the organization for future reference
PC15. verify the documents and track them from finished product to raw materials, in case of quality concerns, and during quality management system audits

e) OS-Food safety, hygiene and sanitation for processing food products

Description This unit is about maintaining food safety, hygiene and sanitation in work area and processing unit for processing food products

Scope The scope of this role will include: Perform safety and sanitation related functions (for processing food products), Apply food safety practices (for processing food products)

i) Perform safety and sanitation related functions (for processing food products)

PC1. comply with food safety and hygiene procedures followed in the organization PC2. ensure personal hygiene by use of gloves, hairnets, masks, ear plugs, goggles, shoes, etc.
PC3. ensure hygienic production of food by inspecting raw materials, ingredients, finished products, etc. for compliance to physical, chemical and microbiological parameters
PC4. pack products in appropriate packaging materials, label and store them in designated area, free from pests, flies and infestations
PC5. clean, maintain and monitor food processing equipment periodically, using it only for the specified purpose
PC6. use safety equipment such as fire extinguisher, first aid kit and eye-wash station when required
PC7. follow housekeeping practices by having designated area for materials/tools
PC8. follow industry standards like GMP and HACCP and product recall process
PC9. attend training on hazard management to understand types of hazards such as physical, chemical and biological hazards and measures to control and prevent them
PC10. identify, document and report problems such as rodents and pests to management
PC11. conduct workplace checklist audits before and after work to ensure safety and hygiene
PC12. document and maintain raw material, packaging material, process and finished products for the credibility and effectiveness of the food safety control system

ii) Apply food safety practices (for processing food products)
PC13. determine the quality of food using criteria such as aroma, appearance, taste and best before date, and take immediate measures to prevent spoilage

PC14. store raw materials, finished products, allergens separately to prevent cross-contamination
PC15. label raw materials and finished products and store them in designated storage areas according to safe food practices
PC16. follow stock rotation based on FEFO/ FIFO

Course Code	Qualification Pack	L	T	P	H	Cr
QPFT-302	**Honey Processing**	0	0	8	8	**01**

Brief Job Description

A QP in Honey Processing person is responsible for carrying out operations which include honey collection, beehives handling maintaining the bees and beehives. The associated person carryout all post-harvest plant operation which include, collection, purification, separation, testing, quality control and maintenance, bottling, packaging, and storage activities.

Personal Attributes

The QP in Honey Processing individual must be physically fit to work for long durations. The person must have attention to detail and the ability to make independent decisions. The individual must also know how to read and write.

Occupational Standards (OS)

Element Performance Criteria

i) Apiary and its characteristics

PC1 Definition of honey, Blossom Honey, Honeydew honey, Cream honey, Crystallization of honey,

PC2 Visit to APIARY, Learning about source of honey, collection procedure of honey by bees into beehive.

PC3 Types of Hives, Species of Bees, Storage of Nectar and its conversion to honey, Basic concepts of Honey farming.

PC4 Identification of flora of honey by taste and visual inspection.

PC5 Receiving of raw honey, condition and kind of the honey buckets, Capacity of the bucket, Hygienic conditions of vehicle and plant, Sampling techniques of honey, Sample storage for traceability.

PC6 Extraction of Honey, to perform sampling of honey for further analysis of honey for quality assurance.

ii) Handling of extracted honey

PC7 Learning about collection of Pollen, Propolis, royal jelly, bee wax and study their properties.

PC8 Sensory Evaluation of raw honey for flora identification. Identification of Honey by organoleptic analysis (Appearance, Taste, and smell).

PC9 Visual inspection of fermentation by smell and bubble formation, to ascertain the composition of honey.

iii) Honey Processing and equipments

PC10 To study the operation and working of the honey processing equipment like liquefaction, filters, moisture reduction equipment, pasteurizers, and homogenizers.

PC11 Other equipment used in honey processing such as strainers. vacuum evaporators, settling tanks, C3 and C4 Plants.

PC12 Practical demonstration of moisture reduction equipments, practical demonstration of pasteurizers

PC13 Maintenance of honey processing equipments and cleaning of equipments and processing area,

PC14 Types of detergents and sanitizers used for cleaning of equipments and plant, preparation and concentration of different detergents and sanitizers.

iv) Honey Quality analysis and quality control

PC15 Grading of honey based on physicochemical characteristics of raw and processed Honey **(**moisture content, fructose glucose ratio, acidity, optical density. pH, sucrose, fructose, total acidity, diastase activity, non-reducing sugar content, total reducing sugar), effect on honey quality of processing, pH)

PC16 Estimation of colour with the help of colorimeter (Colour of honey, Relation of colour and flora of honey, category of honey based on colour. pfund units and its relation with colour of honey).

PC17 Identify the processed and unprocessed honey by determining the HMF content of honey.

PC18 To determine heat processing of honey for poor or rich enzyme activity, practical differentiations between pure honey and sugar syrup, basic introduction to carbohydrates, reducing sugar, non-reducing sugars, maximum limit of sucrose and minimum amount of apparent sugars allowed in honey according to FSSAI, standards of FSSAI to identify the adulteration in honey

v) Liquid Honey and its products

PC19 Utilization and economic importance of other bee products like Royal Jelly, Pollens, Propolis, Bee Wax.

PC 20 Properties of honey products, Other bee products, propolis, pollen and royal jelly. medicinal properties of honey and other bee products and its application in various food and pharmaceutical.

vi) Honey adulteration and its detection

PC21 Awareness about basic and advanced adulterations in honey to bypass testing parameters.

PC22 Adulteration in honey by Glucose syrup, fructose Syrup, Rice Syrup, Cone syrup.

PC23 Stable carbon isotope ratio analysis and NMR technique to check honey adulteration

iv) Bottling, Packaging and labelling of honey

PC24 Different types of packaging materials used for honey and packaging machines.

PC25 Practical Operation and working of nozzle filling and bottling machines. Operation of labelling and induction machine, demonstration of Induction sealing and capping machine.

SUMMER-I							
S.No	**Code No.**	**Course Title**	**Hours per week**			**Hours**	**Credits**
			L	**T**	**P**		
1	QPFT-103	Fruits and Vegetables Processing (4 Weeks)	0	0	24	24	**03**

Brief Job Description: A **QP in Fruits and Vegetables Products** person is responsible for supervising and coordinating production activities, applying knowledge of production methods, processes, machines, and equipment, testing, and directing activities to workers engaged in production.

Personal Attributes: A **QP in Fruits and Vegetables Products** holder must have the ability to plan, organize, prioritize, calculate, and handle pressure. In addition, the individual must have stamina, understanding of food safety standards & requirements and professional hygiene.

Occupational Standards (OS)

a) OS-Ensure preparation and maintenance of work area and processing machineries for production of fruit and vegetable products

Description

This OS unit is about ensuring preparation of work area for hygiene and safety, and ensuring performance, efficiency and maintenance of process machineries and tools for production of fruit and vegetable products, as per the specifications and standards of the organization

Scope

This unit/task covers the following: Ensure preparation and maintenance of work area, Ensure preparation and maintenance of process machineries and tools.

Element Performance Criteria

i) Ensure preparation and maintenance of work area

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

PC1. ensure that the work area is cleaned using approved sanitizers and cleanliness is maintained to keep it free from dust, waste, flies and pests
PC2. ensure that the work area is safe and hygienic for food processing
PC3. ensure disposal of waste materials as per defined Standard Operating Procedure (SOP) and industry requirements

ii) Ensure preparation and maintenance of process machineries and tools

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

PC4. ensure the working and performance of all machineries and tools used for production of fruits and vegetable products
PC5. ensure machineries and tools are cleaned using recommended sanitizers following the SOP
PC6. ensure tools required for process are placed in their designated place
PC7. ensure minor repairs/ faults of all machines are attended

b) OS-Execute production planning of fruit and vegetable products

Description
This OS unit is about preparation for production of fruit and vegetable products by planning production, planning machinery utilization and organizing raw materials and packaging materials.

Scope
- Execute planning of production schedule
- Execute planning of manpower
- Organize raw materials and packaging materials.

Element Performance Criteria

i) Execute planning of production schedule

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

PC1. Execute planning production sequence by: grouping products of same type (varieties of juices, pulps, jams, pickles etc), using same equipment and machinery for various products such that one product does not impact the quality of the other, planning maximum capacity utilization of machineries, considering the process time for each product, planning efficient utilization of resources/manpower, prioritizing urgent orders
PC2. calculate the batch size based on the production order and machine capacity.

ii) Execute planning of manpower

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

PC3. calculate lead time for production of various products planned.
PC4. prepare shift schedule for assistants/technicians.
PC5. allot responsibilities to the assistants/technicians and helpers.

iii) Organize raw materials and packaging materials

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

PC6. calculate the raw materials requirement (considering the process loss) to produce finished product(s) as per production order.
PC7. calculate the raw materials, packaging materials and manpower requirement for completing the order.
PC8. check the availability of raw materials, packaging materials, equipment, and manpower.

PC9. prepare indent for issue of raw materials and packaging materials from store.
PC10. ensure transfer of raw materials and packaging materials from store to production and packaging area through helpers
PC11. ensure checking the weight of raw materials and packaging materials received from store and check its conformance of quality to organisation standards through physical parameters such as appearance, colour, texture etc.
PC12. verify quality documents from supplier and internal lab to ensure its conformance to standards.
PC13. ensure raw materials (including ingredients, additives, preservatives etc) for the batch are weighed accurately following the formulations.

c) OS-Supervise production of fruit and vegetable products

Description

This OS unit is about supervising production of fruit and vegetable products to meet.
the specifications and standards of the organization.

Scope

This unit/task covers the following:

- Perform pre-start checks on machineries for production.
- Supervise production.
- Ensure postproduction cleaning and regular maintenance of equipments
- Handle team and provide training.

Element Performance Criteria

i) Perform pre-start checks on machineries for production

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

PC1. check and ensure cleanliness and sterilization of all fruit and vegetable processing machineries such as washer, peeler, slicer, pulper, drier, juice extractor, juice clarifier, evaporator, retort, pasteurizer, steam jacketed kettle, packaging machines, etc.
PC2. check and ensure maintenance has been carried out on all fruit and vegetable processing machineries and equipments
PC3. check and ensure all process machineries are clean and in good mechanical condition
PC4. check assembling of fittings such as stirrer, blades, pipes and other parts to equipment and ensure all machineries are ready for production
PC5. start process machineries and ensure their working and performance and check if required tools are kept accessible to attend repairs/faults in case of breakdown

ii) Supervise production

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

PC6. review production orders or schedules to ascertain product details such as type of products to be produced, quantities, specifications of products and scheduled delivery dates in order to plan production operation
PC7. check and ensure production area is safe and clean
PC8. verify the quality report on raw materials to ensure its conformance to quality standards
PC9. monitor control panel of each fruit and vegetable processing machinery and ensure applicable process parameters such as temperature, pressure, time etc (as applicable) are set in accordance with standards for production of various fruit and vegetable products
PC10. check control points and equipments at regular intervals to ensure operational performance and optimum utilization
PC11. stop production following stop procedure, in case of machine breakdowns during production
PC12. co-ordinate with maintenance team and ensure machine breakdowns are attended to immediately in order to prevent operational delays
PC13. suggest control measures and corrective actions for any problems related to production, process and products (if required consult with manager and resolve problems)
PC14. ensure product quality by establishing and enforcing organization standards in each stage of production process
PC15. monitor packaging of finished products, perform random check on weight of packed products (check label details such as date of manufacture, batch number, expiry date etc.) and ensure products are packed as per organisation and regulatory standards
PC16. monitor production activities, coordinate with cross function team and ensure production is started and completed as scheduled
PC17. ensure timely production with minimum or no wastage, and that the quality of products produced meets organisation and regulatory standards
PC18. analyze production performance records and data, investigate issues related to fruit and vegetable products processing, discuss with manger and identify solutions to prevent/correct problems, and implement suggested corrective action
PC19. evaluate new equipment and techniques while producing new products and on installation of new machineries
PC20. maintain safe and clean work environment by educating team on procedures to maintain compliance
PC21. monitor activities and performance of assistants, technicians, operators and helpers
PC22. provide production information to the manager by compiling, sorting, and analyzing production performance records of all shifts
PC23. update manager on day-to-day activities, discuss problems, suggest or understand suggested preventive and corrective action, and implement corrective actions immediately
PC24. contribute to team effort by handling production activities in absence of assistants or shortage of workers, to accomplishing required results

iii) Ensure post production cleaning and regular maintenance of equipments

To be competent, the user/individual must be able to:
PC25. monitor cleaning of work area, equipments and tools using recommended cleaning agents and sanitizers
PC26. ensure minor repairs/faults (if any) of all components and machines are attended to before the start of next production
PC27. ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment following the SOP or following suppliers instructions/manuals

d) OS-Complete documentation and record keeping related to production of fruit and vegetable products

Description

This OS unit is about documenting and maintaining records of raw materials, processed and finished products related to production of fruits and vegetables.

Scope

This unit/task covers the following: Document and maintain records of raw materials, Document and maintain records of production schedule and process parameters, Document and maintain records of finished product

Element Performance Criteria

i) Document and maintain records of raw materials

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

PC1. document and maintain record of details of raw materials and packaging materials such as name of raw material, type and variety, grown area, grown season, quantity, vendor/supplier details, date of manufacture, expiry date, quality report from supplier and internal lab etc. as per organisation standards
PC2. document and maintain record on observations (if any) related to raw materials and packaging materials
PC3. load the raw materials details in ERP for future reference
PC4. verify the documents and track from finished product to raw materials, in case of quality concerns and during quality management system audits

ii) Document and maintain records of production schedule and process parameters

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

PC5. document and maintain records of production plan with details such as product details, production sequence, equipments and machinery details, efficiency and capacity utilization of equipment
PC6. document and maintain records of process details such as type of raw material used, process parameters (temperature, time, pressure, etc. as applicable) for entire production and packaging in process chart or production log for all products produced
PC7. document and maintain records of batch size, production yield, wastage of raw materials, energy utilization and final products produced
PC8. document and maintain record of observations (if any) or deviations related to process and production
PC9. load the production plan and process details in ERP for future reference
PC10. verify documents and track from finished product to process details and raw materials, in case of quality concerns and for quality management system audits

iii) Document and maintain records of finished product

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

PC11. document and maintain records of the types of finished products produced like variants of jam, jelly, pulp, juice, pickle, dehydrated fruits and vegetables etc
PC12. document and maintain records of the finished products details such as batch number, time of packing, date of manufacture, date of expiry, other label details, primary, secondary and tertiary packaging materials for all finished products, storage conditions, etc. as per organisation standards
PC13. document and maintain record of observations or deviations (if any) related to finished products
PC14. load the finished product details in ERP for future reference
PC15. verify the documents and track from finished product to raw materials, in case of quality concerns and for quality management system audits

e) OS-Ensure food safety, hygiene and sanitation for processing food products
Description

This OS unit is about maintaining food safety, hygiene and sanitation in work area and processing unit for processing food products

Scope

This unit/task covers the following: Perform safety and sanitation related functions, Apply food safety practices

Element Performance Criteria

i) Perform safety and sanitation related functions

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

PC1. comply with food safety and hygiene procedures followed in the organisation
PC2. ensure personal hygiene by use of gloves, hairnets, masks, ear plugs, goggles, shoes, etc.
PC3. ensure hygienic production of food by inspecting raw materials, ingredients, finished products, etc. for compliance to physical, chemical and microbiological parameters
PC4. ensure packing of products in appropriate packaging materials, label and store them in designated area, free from pests, flies and infestations
PC5. ensure cleaning, maintaining and monitoring food processing equipment periodically, using it only for the specified purpose
PC6. ensure use of safety equipment such as fire extinguisher, first aid kit and eyewash station when required
PC7. follow housekeeping practices by having designated area for materials/tools
PC8. follow industry standards like GMP and HACCP and product recall process
PC9. attend training on hazard management to understand types of hazards such as physical, chemical and biological hazards and measures to control and prevent them
PC10. identify, document and report problems such as rodents and pests to management
PC11. conduct workplace checklist audits before and after work to ensure safety and hygiene
PC12. document and maintain raw material, packaging material, process and finished products for the credibility and effectiveness of the food safety control system

ii) Apply food safety practices
To be competent, the user/individual must be able to:

PC13. determine the quality of food using criteria such as odour, appearance, taste and best before date, and take immediate measures to prevent spoilage
PC14. store raw materials, finished products, allergens separately to prevent cross contamination
PC15. label raw materials and finished products and store them in designated storage areas according to safe food practices
PC16. follow stock rotation based on FEFO/ FIFO

f) OS-Manage and lead a team

Description
This OS unit is about managing the team on day-to-day basis, ensuring their deployment, motivating them by involving them in various engagement initiatives at the work area, helping them improve their skills levels and managing their grievances in the best possible manner in order to maximize people productivity.

Scope

This unit/task covers the following: Manage and lead a team, Handle team and provide training

Element Performance Criteria
i) Manage and lead a team

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

PC1. ensure that the team is aware of the schedule and job expectations on a daily basis
PC2. involve the team in regular meetings to communicate information intended for them
PC3. ensure communication to the team on any changes in policies/ processes by the organization through required verbal/ written mechanisms
PC4. ensure participation of the team in various engagement initiatives organized by the organization
PC5. counsel and address issues among the team for any work related issues
PC6. support the manager in deployment of the team as per production schedule and the organizational norms and guidelines
PC7. ensure periodic training of the team and support the team by delivering trainings
PC8. share knowledge of processes, techniques and products with the team to enhance their skill levels
PC9. provide feedback to the manager pertaining to performance of the team

ii) Handle team and provide training
To be competent, the user/individual must be able to:
PC10. motivate workers, initiate and develop co-operation within and between departments, develop personal growth opportunities

PC11. maintain effective supervisor-worker relations, create safe work environment, establish effective communication methods, identify and solve employee problems, manage conflict, respond to grievances

PC12. manage employees and team performance, provide new employee orientation, educate team on procedures to maintain compliance, train or provide adequate training and motivate employees

PC13. coach, counsel and discipline employees, initiate, coordinate and enforce systems, policies and procedures through team

PC14. evaluate, investigate complaints or performance concerns and implement disciplinary action as needed in consultation with proper authorities

SUMMER-II							
Sl.No	**Code No.**	**Course Title**	**Hours per week**			**Hours**	**Credits**
			L	**T**	**P**		
1	QPFT-203	**Food Laboratory Techniques** (6 weeks)	0	0	16	16	**02**

SECTOR: FOOD PROCESSING

SUB-SECTOR: Fruit and Vegetable, Food Grain Milling (Including Oilseeds), Dairy Products, Meat and Poultry, Fish & Sea Food, Bread and Bakery, Alcoholic Beverages, Aerated Water/Soft Drinks, Soya Food, Packaged Foods

OCCUPATION: Quality Analysis
Brief Job Description: An **QP in Food Laboratory Techniques** person is responsible for ensuring quality products through sampling of raw materials, packaging materials, finished products and shelf-life samples for quantitative and qualitative analysis.

Personal Attributes: An **QP in Food Laboratory Techniques** holder should have the ability to plan, organize and prioritize. The individual must possess reading, writing and communication skills. In addition, the individual must have personal and professional hygiene. S/he must understand food safety standards and requirements.

Occupational Standards (OS)

a) OS-Prepare and maintain work area and equipments for food lab testing

Description

This unit is about preparing work area for hygiene and safety, and ensuring performance, efficiency and maintenance of laboratory equipments and tools, for food lab testing, as per the specifications and standards of the organization.

Scope

This unit/task covers the following:
- Prepare and maintain work area (for food lab testing)
- Prepare and maintain lab equipments and tools (for food lab testing)

Element Performance Criteria

i) Prepare and maintain work area (for food lab testing)

PC1. clean and maintain the cleanliness of the work area using approved sanitizers and keep it free from dust, waste, and spillage.
PC2. ensure that the work area is safe and hygienic for food analysis.
PC3. dispose waste materials as per defined SOPs and industry requirements.

ii) Prepare and maintain lab equipments and tools (for food lab testing)

PC4. check the working and performance of all machineries and tools used for process such as weighing scales, pH meter, moisture analyser, oven, water bath, sterilizer, sieve shaker, refractometer, TDS (total dissolved solvents) meter, equipments for testing packaging materials, etc.
PC5. clean the equipments and glass wares used with recommended sanitizers following specifications and organisation standards
PC6. attend minor repairs/faults of equipments, if required
PC7. organize glass wares and equipments for analysis

b) OS-Prepare for quality analysis and manage housekeeping for food lab activities

Description
This OS unit is about preparing for quality analysis and managing housekeeping as per the specifications and standards of the organization.

Scope
This unit/task covers the following:
- Calibrate and maintain equipments (for food lab activities)
- Preparation of reagents (for food lab activities)
- Manage housekeeping(for food lab activities)

Element Performance Criteria

i) Calibrate and maintain equipments (for food lab activities)

PC1. read and understand the instructions from the food lab technician
PC2. read and understand the standard operating procedures (sop) for calibration of each equipments
PC3. calibrate equipments like weighing scale, measuring jars, ph meter etc on daily basis
PC4. record the reading in the calibration register
PC5. handle and maintain tools (deadweights, calibrated measuring jars) and reagent (standard solutions) used for calibration of equipments following laboratory procedures and standards
PC6. maintain list of all equipments along with its calibration frequency
PC7. update the lab technician in advance on external calibration dates, follow up with external labs and ensure external calibration of equipments on time
PC8. maintain record/file on external calibration reports
PC9. check the working and performance of all equipments on regular basis
PC10. report any malfunction/repairs to the lab technician
PC11. inform the supplier/manufacturer on the malfunction/repairs and get it repaired immediately
PC12. maintain list of all equipments along with the details of annual maintenance contract
PC13. follow up with the annual maintenance contractor and ensure maintenance of all equipments
PC14. record all details on lab equipment like performance, faults, repairs, annual maintenance etc in the equipment register and in ERP

ii) Prepare re agents (for food lab activities)

PC15. read and understand the SOPs for preparing each reagent
PC16. weigh required chemicals and measure solvents in calibrated instruments and measuring jars
PC17. mix solvents and chemicals and maintain required conditions following the procedure for preparing the reagents
PC18. prepare standards solutions for calibration of equipments
PC19. switch on the water distillation unit and prepare distilled water
PC20. ensure availability of distilled water and standard solutions all time
PC21. store the chemicals, solvents, acids, reagents etc following manufacturer's instructions (from the label) or following laboratory procedures and standards
PC22. maintain list of all chemicals, solvents, acids, reagents, glass wares, consumables, equipment spares etc used in the laboratory
PC23. check the inventory of lab chemicals, glass wares, consumables, equipment spares at regular intervals in the register and erp and update lab technician on the inventory status
PC24. prepare purchase requisition for lab chemicals, glass wares, consumables, equipment spares with the approval of superiors, and process requisition
PC25. ensure and maintain inventory of all lab chemicals, glass wares, consumables, equipment spares etc
PC26. clean the glassware used for analysis with recommended detergents, disinfectants and sanitizers
PC27. clean and maintain equipments used following the maintenance procedures for equipments

iii) Manage housekeeping (for food lab activities)

PC28. read and understand the SOP and checklist for housekeeping
PC29. visit the warehouses (raw materials, packaging materials, finished goods), process/production area, packaging area, laboratory at regular intervals and perform checks based on the housekeeping checklist
PC30. inform the food lab technician in case of any deviation
PC31. understand the suggested corrective action
PC32. ensure to implement the corrective action immediately
PC33. file the housekeeping checklist
PC34. maintain records on all documents related to the housekeeping activity

c) OS-Sampling and quality analysis for food lab activities

Description

Sampling and quality analysis as per the specifications and standards of the organization.

Scope

This unit/task covers the following:

- Sampling for quality analysis (for food lab activities)
- Quality Analysis of samples (for food lab activities)

Element Performance Criteria

i) Sample for quality analysis (for food lab activities)

PC1. read and understand the sampling instructions from the food lab technician
PC2. sample the raw materials (agricultural produce, ingredients, flavors, emulsifiers, preservatives etc) from the delivery truck/warehouse/storage area following sop
PC3. sample the packaging materials (bottle, cap, crown, can, carton, label, pouch etc) from the delivery truck/warehouse/storage area following sop
PC4. sample production samples from the production line/process line based on the frequency followed by the organisation (for analysis and to maintain production control sample)
PC5. sample the finished product(s) from the production storage area/warehouse
PC6. sample shelf life sample from the shelf life storage room
PC7. collect the pre-shipment samples sent by the vendors from purchase/supply chain department
PC8. collect samples from effluent treatment plant following procedures and standards of the organisation
PC9. collect samples received from the market such as customer/consumer complaint samples, market samples, competitor sample
PC10. label the samples with details like sample name, date and time of sampling, batch/manufacture /expiry details (as applicable)
PC11. collect all documents pertaining to incoming lab samples like copy of purchase order, invoice, certificate of analysis etc for verification and records
PC12. ensure all documents are provided by the supplier as per organisation standards
PC13. transfer the samples to food lab and place in the designated area for analysis
PC14. verify the certificate of analysis (coa) against organisation standards
PC15. record the sample details in the lab register and file the supplier documents
PC16. file and maintain all documents related to sample along with the test report
PC17. transfer the production control sample and shelf life sample to the control sample/shelf-life sample room
PC18. record the sample details in production control sample register and shelf-life sample register, and upload in ERP
PC19. monitor and maintain the storage conditions (like temperature, humidity, cleanliness etc) of the control sample/ shelf-life sample room
PC20. dispose the control sample and shelf-life sample after the control period following disposal procedures and as per organisation standards

ii) Quality analysis of samples (for food lab activities)
PC21. read and understand the standard operating procedures (sop) for analysis of each sample
PC22. carry out analysis in calibrated equipments following standard operating procedure
PC23. perform basic tests on physical parameters like colour, appearance, texture, weight, count etc on food and agricultural commodity samples collected
PC24. perform basic chemical analysis like moisture content, bulk density, ph, total soluble solids (tss) using refractometer, etc on food and agricultural commodity samples collected
PC25. perform tests on packaging material like measuring dimensions of all packaging materials , checking the printed matter and comparing with standard, checking strength of cartons etc for all samples collected
PC26. inform the food lab technician of any discrepancies in the analysis result
PC27. record the results in the quality analysis register
PC28. enter the results in the erp system

PC29. clean the glassware used with recommended detergents, disinfectants and sanitizers
PC30. clean and maintain equipments used, following maintenance procedures for equipments

d) OS-Complete documentation and record keeping related to performing food lab activities

Description

This OS unit is about documenting and maintaining records on sampling and analysis of raw materials, packaging materials, finished products, production sample, market sample and production control sample, equipment calibration and regulatory requirements for performing food lab activities.

Scope

This unit/task covers the following:

- Document and maintain records of raw materials and packaging materials (for performing food lab activities)
- Document and maintain records of finished products, production sample, control sample (for performing food lab activities)
- Document and maintain records of market samples (for performing food lab activities)
- Document and maintain records of equipment and calibrations (for performing food lab activities)

Element Performance Criteria

i) Document and maintain records of raw material and packaging material (for performing food lab activities)

PC1. document and maintain records of all raw materials and packaging materials sampled such as place of sampling, sampling procedure, details of sample such as supplier information, batch number, receiving date/ date of manufacture, expiry date, supplier quality document, supplier documents (P.O., invoice, certificate of analysis, etc.), condition of the transport vehicle, condition of raw material etc., as per company standards
PC2. document and maintain records on raw materials and packaging material analysis such as parameters analyzed, method of analysis, storage of sample, equipments used for analysis, analysis results, certificate of analysis, etc. as per company standards
PC3. maintain record of observations (if any) related to raw materials, packaging materials
PC4. load the analysis details in ERP for future reference
PC5. verify the documents and track from finished product to raw materials, in case of quality concerns and during quality management system audits

ii) Document and maintain records of finished products, production sample, control sample and shelf-life sample (for performing food lab activities)

PC6. document and maintain records on analysis of production samples such as sampling stage/sampling area (in the process line), sampling methods and sampling condition, date of manufacture, expiry date, parameters analyzed, method of analysis, equipments used for analysis, analysis results, print of graph/chart obtained, certificate of analysis, etc. as per company standards
PC7. document and maintain records on analysis of finished products such as batch number, sampling methods and sampling condition, date of manufacture, expiry date, label details,

parameters analyzed, method of analysis, storage of sample, equipments used for analysis, analysis results, print of graph/chart obtained, certificate of analysis, etc. as per company standards

PC8. document and maintain records on analysis of finished products such as batch number, sample storage conditions, methods and sampling condition, date of manufacture, expiry date, label details, parameters analyzed, method of analysis, equipments used for analysis, analysis results, print of graph/chart obtained, certificate of analysis etc, as per company standards

PC9. document and maintain records on analysis of shelf-life samples for all products such as batch number, sample storage conditions, methods and sampling condition, date of manufacture, expiry date, label details, parameters analyzed, method of analysis, equipments used for analysis, analysis results, print of graph/chart obtained, certificate of analysis, etc, as

per company standards

PC10. maintain record on observations or deviations (if any)

PC11. load the analysis details in ERP for future reference

PC12. verify documents and track from finished product to raw materials, in case of

quality concerns and for quality management system audits

iii) Document and maintain records of market samples (for performing food lab activities)

PC13. document and maintain records on analysis of market samples such as product name, sampling location (in market), type of outlet, display condition, storage condition, sampling methods and sampling condition, method of transfer of sample to lab, physical condition of sample (package and product), date of manufacture, expiry date, parameters analyzed, method of analysis, equipments used for analysis, analysis results, print of graph/chart obtained, final remarks etc, as per company standards

PC14. document and maintain records on analysis of competitors sample from market samples such as product name, sampling location (in market), type of outlet, display condition, storage condition, sampling methods and sampling condition, method of transfer of sample to lab, physical condition of sample (package and product), date of manufacture, expiry date, parameters analyzed, method of analysis, equipments used for analysis, analysis results, print of graph/chart obtained, final remarks etc, as per company standards

PC15. document and maintain records on analysis of complaint sample (customer/consumer complaint) from market such as name of product, nature of complaint, complainant details, complaint location (in market), condition of the pack (opened/sealed), storage condition, sampling methods and sampling condition, method of transfer of sample to lab, physical condition of sample (package and product), date of manufacture, expiry date, parameters analyzed, method of analysis, equipments used for analysis, analysis results, print of graph/chart obtained, final remarks, root cause analysis report, suggested corrective action, corrective action taken, status of complain (open/close), methods of closing the complain etc, as per company standards

PC16. maintain record on observations or deviations (if any)

PC17. load the analysis details in ERP for future reference

PC18. verify documents and track from finished product to raw materials, in case of quality concerns and for quality management system audits

iv) Document and maintain records of equipment and calibrations (for performing food lab activities)

PC19. document and maintain records on equipments used for analysis, condition of the equipment, control used for analysis, equipment parameter, equipment performance, time taken for analysis, etc. as per company standards
PC20. document and maintain records of equipment calibration such as date of calibration, procedure and method used for calibration, errors/variations observed, calibration readings, internal and external calibration reports, reagents/standards/tools used for calibration condition of the equipment, etc. as per company standards
PC21. maintain record of observations or deviations (if any)
PC22. load the details in ERP for future reference
PC23. verify the documents and track from analysis report to equipment used, in case of quality concerns and for quality management system audits

e) OS-Food safety, hygiene and sanitation for food lab testing
Description
This unit is about maintaining food safety, hygiene and sanitation in work area and processing unit for food lab testing.
Scope
The scope of this role will include:
 Perform safety and sanitation related functions (for food lab testing)
 Apply food safety practices (for food lab testing)

Element Performance Criteria
i) Perform safety and sanitation related functions (for food lab testing)

PC1. comply with food safety and hygiene procedures followed in the organisation.
PC2. ensure personal hygiene by use of gloves, hairnets, masks, ear plugs, goggles, shoes, etc.
PC3. ensure hygienic production of food by inspecting raw materials, ingredients, finished products, etc. for compliance to physical, chemical and microbiological parameters.
PC4. clean, maintain and monitor food processing equipment periodically, using it only for the specified purpose.
PC5. use safety equipment such as fire extinguisher, first aid kit and eye-wash station when required.
PC6. follow housekeeping practices by having designated area for materials/tools
PC7. follow industry standards such as GMP and HACCP and product recall process.
PC8. attend training on hazard management to understand types of hazards such as physical, chemical and biological hazards and measures to control and prevent them
PC9. identify, document and report problems such as rodents and pests to management.
PC10. conduct workplace checklist audits before and after work to ensure safety and hygiene
PC11. document and maintain raw material, packaging material, process and finished products for the credibility and effectiveness of the food safety control system.

ii) Apply food safety practices (for food lab testing)
PC12. determine the quality of food using criteria such as odour, appearance, taste and best before date, and take immediate measures to prevent spoilage.

PC13. store raw materials, finished products, allergens separately to prevent cross-contamination.
PC14. label raw materials and finished products and store them in designated storage areas according to safe food practices.
PC15. follow stock rotation based on FEFO/ FIFO