FOOD PROCESSING & PACKAGING TECHNICIAN

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LEARNER GUIDE

National Vocational Certificate Level 1

Version 1 - November, 2019

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Introduction

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

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

The main elements of your learner's guide are:

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

Module 5: Adopt Basic Good Manufacturing Practices (GMP) for Food Processing & Packaging

Objective of the module:

After completing this module, the learner will be able to identify the competencies for GMP guidelines commonly used to implement, manage and improve quality standard programs in food processing. The trainees will understand GMP systems in different food operations, including procedures and documentation for product safety, hygienic product manufacture and handling, packaging and labelling within specifications, as well as proper documentation and record keeping.

Duration   60 hours   **Theory:**   12 hours   **Practical:**   48 hours

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1: **Apply basic GMP requirements in regard to layout of premises, workspace**	**P1.** Permit adequate cleaning and/or disinfection **P2.** Protect against the accumulation of dirt, toxic materials, food debris and the formation of condensation **P3.** Aware of layout and construction of the food premises as per Food hygiene legislation **P4.** Provide sufficient space for food production and storage of equipment **P5.** Adequate mechanical ventilation to effectively remove fumes, smoke, steams, and vapours from food	Explain importance of layout in food industry (display lay-out in variant places) Describe methods of removing /protecting dirt, toxic material food debris and the formation of condensation (hand and mechanical cleaning) Describe the factors affecting on the selection of food industry site. (free from wooden area disposal, availability of water etc.) Define the separation of operation procedures (space for storage of raw material, processed material etc.) Describe the Importance of mechanical ventilation (exhaust and ducting system) Explain the rule of provincial and federal food safety regulation department in food industry (PFA)	Mopes, PPE's, buckets,

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
	premises **P6.** Follow safety rules and regulations for the food processing industry		
LU2: **Apply Basic GMP requirements in regard to personal hygiene**	**P1.** Perform proper hand washing and disinfection procedures before entering production area. **P2.** Report to supervisor in the case of illness **P3**. Wear Personal Protective Equipment (PPE) as per SOPs regarding hygienic measures	Describe the hand washing procedure (rub palm, rub the back, rub both wrists etc.) Define viral and non-viral disease (fever, hepatitis) Enlist PPE's regarding hygienic measure (hygiene cap, beard mask, face mask, shoes cover etc.)	Disinfectants, sanitizer
LU3: **Apply basic GMP requirements in regard to food processing, including rework**	**P1.** Make sure that the actual food rework is clearly identifiable. **P2.** Perform rework handling as per industry standards. **P3.** Maintain traceability records of all food rework	Define rework handling procedure (batch documentation & product history) Describe the procedure of rework handling (identify the problem in product, sampling of product, recheck batch history, corrective action) Define traceability (batch reports, analysis report)	Insect-o-cutters, Bait Station, Glue Boards, Straws, Cages
LU4: **Apply basic GMP requirements in regard to food packaging**	**P1.** Prevent contamination in manufacturing, storage and transportation **P2.** Ensure food contact materials and products are safe for their intended uses	Define GMP in food packaging area (packaging environment & packaging parameters)	Hose cleaning pipe, scrubbers, mopes, color coded brushes,

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
	P3. Maintain packing surfaces and equipment to minimize product damage and contamination	Describe the sources of contamination and product damage (conveyors, dead joints etc.)	
LU5: **Apply basic GMP requirements in regard to documentation and records**	**P1.** Fill out specifications, records, batch production records for production under supervision **P2.** Interpret laboratory control records **P3.** Maintain records to support that any Good manufacturing practices (GMP) have been implemented **P4.** Locate documents of external origin, if needed **P5.** Safeguard documents and records appropriately	Define how to maintain documentation in food industry (batch reports, log sheets) Define the work bench instructions (lab analysis protocol) Describe the importance of proper documentation and record keeping	tempered glass, Glass protective lights, file racks
LU6: **Apply basic GMP requirements to production quality control and in process controls**	**P1.** Follow master production instructions (SOPs) **P2.** Perform basic in-process control measurements (e.g. pH, weighing) under	Define SOP's; Elements of process control (measurements, control strategy, control action) Enlist basic food quality control measures (pH, acidity, temperature, viscosity etc.) Explain the procedure of pH, acidity and	trolleys, pH mater, weighing balance

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
	supervision	temperature checking	
	P3. Perform basic quality control measure under supervision		
LU7: **Apply basic GMP requirements in regard to storage, warehousing and distribution**	**P1.** Store materials and end product appropriately **P2.** Follow First Expire First Out (FEFO)/First in First Out (FIFO) **P3.** Ensure stacking method as per product description **P4.** Ensure Product storage as per required parameters (temperature, humidity etc.)	Define FEFO and FIFO and its importance Define the materials inventory and stock taking Describe the procedure of storage foods in warehouse and proper distribution (control storage parameters, avoid over stacking, label the pellets)	Lifters, Fork Lifters
LU8: **Apply basic GMP requirements in regard to management of purchased materials**	**P1.** Handle the raw materials as per product requirements **P2.** Meet not only manufacturing order specifications, but also regulatory requirements **P3.** Select the appropriate raw materials based on functionality **P4.** List of existing approved materials and their specifications	Describe the Importance of proper handling of raw materials (quality checks, specifications, regulatory standards.) Describe the process to make list of approved raw material (ingredient name, supplier name, quantity, MFG & EXP date) Define company and customer standards (ISO, BRC, and halal, taste and quality etc.)	Computer, Buckets, Hand jacks, Beakers

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
	P5. Meet existing company or customer standards (e.g. halal, organic, gluten-free		
LU9: **Apply basic GMP requirements in regard to cleaning and sanitation**	**P1.** Ensure safe food supply **P2.** Follow sanitation procedures for all food contact equipment and food contact surfaces **P3.** Analysis the root cause of sanitation failures **P4.** Maintain record keeping associated with the sanitation procedure	Describe safe food supply (inspect and store raw material, appropriate preservation techniques) Explain the cleaning procedure of food contact surfaces (dry cleaning, washing, brushing etc.) Explain the statistical process of quality control (fish bone diagram) Describe record keeping methods (quality checks, parameter log sheet)	Pumps, Valves, CIP solutions, brushes
LU10: **Apply basic GMP requirements in regard to measures for prevention of cross contamination**	**P1.** Ensure segregation of area according to hygiene requirement (Zoning) **P2.** Control equipment to minimize odors and vapors (including steam and noxious fumes) in areas where they may contaminate food **P3.** Ensure adequate floor drainage systems in all areas	Describe the importance of zoning Enlist the methods to minimize bad order in process area (fume hoods, exhaust tunnel, Mechanical ventilation) Describe the importance of proper draining system (remove bad smells, avoid water blockage, prevent from slipping hazards)	Shrink wrap, air tight containers
LU11. **Apply basic GMP requirements in**	**P1.** Identify Target pest related to workplace area **P2.** Ensure preventive	Enlist targeted pest regarding food processing area (ant, house fly cockroach, rat) Explain preventive measure to control pest	Glue gums, mouse/rat traps, insectocutors,

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
regard to Pest Management	measures in regard to pest entry in food processing area **P3.** Install monitoring devices (Insect-o-cutors, Bait Station, Glue Boards, Straws, Cages) **P4.** Clean and maintain monitoring devices **P5.** Maintain record and trend analysis	entry in food processing areas (air cartons, mouse traps, glue boards, insect-o-cutors etc.) Describe cleaning interval of pest control devices Define integrated pest control broad-based approach that integrates practices for economic control of pests (solve pest problem)	glue boards, air curtains
LU12. **Apply basic GMP requirements in regard to food defense**	**P1.** Prevent intentional contamination of food products (Human intervention as the source of contamination) **P2.** Prevent accidental (unintentional) contamination of food products **P3.** Minimize risk and impact of an incident of intentional contamination	Define risk management in food defence; Explain the strategies to Protect Food Against Adulteration with requirements for covered facilities to prepare and implement food defence planes (self-procurement, approved suppliers, process flow monitoring) Describe strategies to prevent accidental contamination of food (label the ingredients, store the ingredients separator) Describe the preventive measures to minimize adulteration (allocate prohibited areas self-procurement, approved suppliers, process flow monitoring)	Shrink wrap machine.

Module 5   072100979

LU1:

Apply basic GMP requirements in regard to layout of premises, workspace

GMP: Good Manufacturing Practice (GMP) is a system for ensuring that products are consistently produced and controlled according to quality standards.

Layout: Actual or proposed sequence of machinery and departments in a factory is known as layout.

LU2:

Apply Basic GMP requirements in regard to personal hygiene

Hygiene: Conditions or practices conducive to maintaining health and preventing disease, especially through cleanliness.

Handwashing Steps

https://www.slideshare.net/amanullah9803150/cleaning-and-disinfection-of-hospital

Cleaning, Disinfection and Sterilization

https://i.ytimg.com/vi/hGauqO1Oon4/hqdefault.jpg

LU5:
Apply basic GMP requirements in regard to documentation and records

Waste Logbook – Facility: _____

Date: _____   Weather: _____
Notes/Special Events Today: _____

Time	Recorded By	Food Type	Loss Reason	# of Portions
			TOTAL	

https://www.template.net/business/log/food-log/

LU6:
Apply basic GMP requirements to production quality control and in process controls

SOP: Standard operating procedures (SOPs) are the documented processes that a company has in place to ensure services and/or products are delivered consistently every time.

Difference Between QA and QC

QC	QA
1. Places greater focus on the quality of the product analysis	1. Concentrates on analyzing the processes within SDLC
2. Utilized to test the software/product by calling it up	2. Utilized to analyze a set of documents without a particular focus on the end product
3. Testing team engaged in the software testing	3. The whole team engaged in the process
4. Assesses the reliability of the end product	4. Determines if the product/software fulfills the requirements
5. Applied to find defects, errors in the product that is being built	5. Applied to identify, analyze and prevent the occurrence of defects
6. Functional testing, automation testing, etc. are used	6. Document review, inspection, test cases review, etc. are used

http://ddi-dev.com/uploads/qc-and-qa.jpg

LU7:

Apply basic GMP requirements in regard to storage, warehousing and distribution

https://www.shutterstock.com/search/fifo

FEFO

FEFO (First Expired First Out)

https://managementmania.com/en/fefo-first-expired-first-out
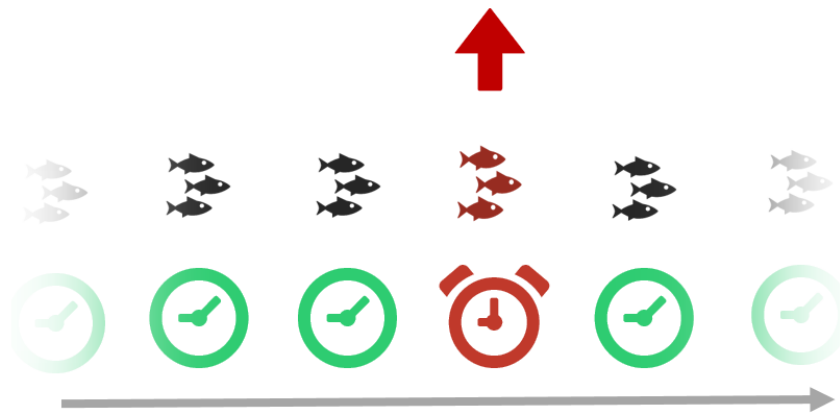
Warehouse Storage Facility

https://www.climatetechwiki.org/content/seed-and-grain-storage-0

LU8:

Apply basic GMP requirements in regard to management of purchased materials

Label

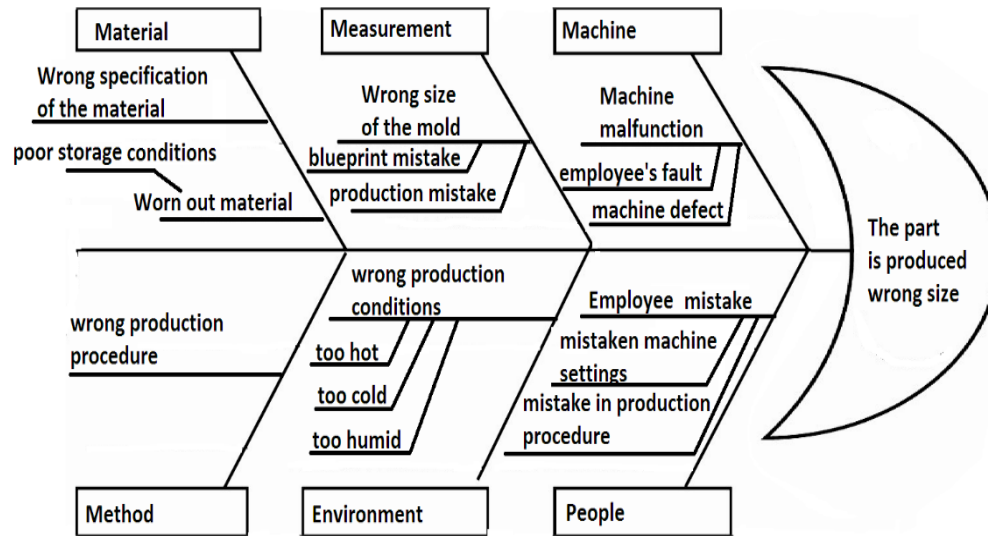//healthylife.werindia.com/health-alerts/food-label-requirements-india

https://www.restaurant.org/Articles/Operations/3-tips-sanitary-food-contact-surfaces

LU9:

Apply basic GMP requirements in regard to cleaning and sanitation

How to Clean a Food Surface

Fishbone Diagram

https://thriveglobal.com/stories/fishbone-method-of-learning/

LU10:

Apply basic GMP requirements in regard to measures for prevention of cross contamination

Fume hood: A fume hood is a type of local ventilation device that is designed to limit exposure to hazardous or toxic fumes, vapors or dusts.

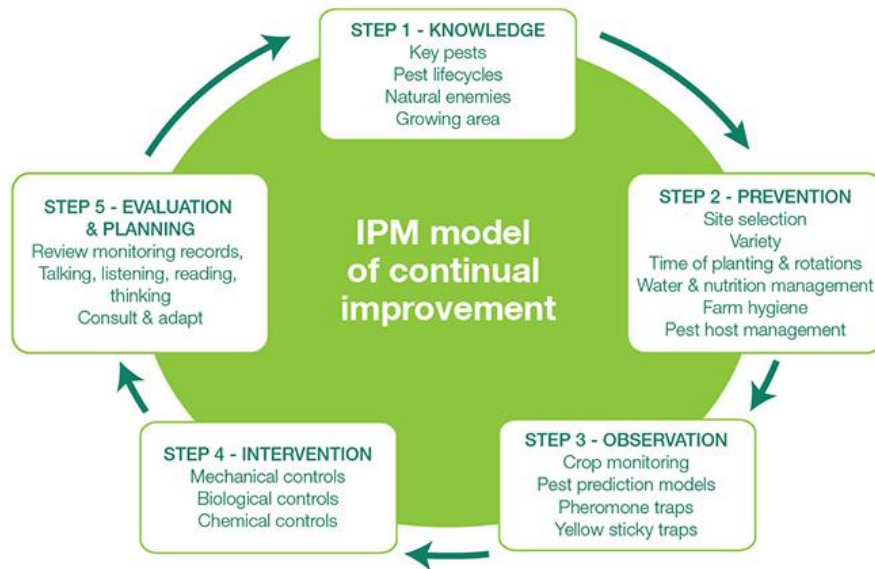https://www.pinterest.com/pin/336433034639826255/?lp=true

Ventilation: Ventilation is the intentional introduction of outdoor air into a space and is mainly used to control indoor air quality by diluting and displacing indoor pollutants.

Drainage: Drainage is the natural or artificial removal of a surface's water and sub-surface water from an area with excess of water.

LU 11.

Apply basic GMP requirements in regard to Pest Management

Integrated Pest Management: Integrated pest management, also known as integrated pest control is a broad-based approach that integrates practices for economic control of pests. IPM aims to suppress pest populations below the economic injury level.

https://www.farmbiosecurity.com.au/what-is-integrated-pest-management/

Glue boards

https://zq-material.en.made-in-china.com/product/oynElfeMEScd/China-Sticky-Yellow-Fly-Trap-Mosquito-Insect-Glue-Trap.html

Rat Traps

https://www.amazon.com/Humane-Animal-Rodent-Animals-Inches/dp/B073TX7FTN

Module summary

Course: *Food Processing & Packaging Technician (Level 1)*	Total Course Duration: 190 Hours

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

Module	Learning Unit	Duration
Module 1. **Comply with Work Health and Safety Policies**		30 Hrs.
Module 2. **Obey the Workplace Policies and Procedures**		20 Hrs.
Module 3. **Follow Basic Communication Skills (General)**		40 Hrs.
Module 4. **Operate Computer**		40 Hrs.

Module	Learning Unit	Duration
Functions(General)		
Module 5. **Adopt Basic Good Manufacturing Practices (GMP) for Food Processing & Packaging**	**LU1.** Apply basic GMP requirements in regard to layout of premises, workspace **LU2.** Apply Basic GMP requirements in regard to personal hygiene **LU3.** Apply basic GMP requirements in regard to food processing, including rework **LU4.** Apply basic GMP requirements in regard to food packaging **LU5.** Apply basic GMP requirements in regard to documentation and records **LU6.** Apply basic GMP requirements to production quality control and in process controls **LU7.** Apply basic GMP requirements in regard to storage, warehousing and distribution **LU8.** Apply basic GMP requirements in regard to management of purchased materials **LU9.** Apply basic GMP requirements in regard to cleaning and sanitation **LU10.** Apply basic GMP requirements in regard to measures for prevention of cross contamination **LU11.** Apply basic GMP requirements in regard to Pest Management Apply basic GMP requirements in regard to food defense	60 Hrs.

Frequently Asked Questions

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

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

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

freelancer?	to support your initiative.

Test Yourself (Multiple Choice Questions)

Module 05

1. Is a substance which cannot be used economically?
      A. Product
      B. Co product
      C. By product
      D. Waste

2. What type of fire can be controlled by A type Fire extinguisher?
      A. Wood
      B. Gasoline
      C. Electric short circuit
      D. Kitchen fire

3. What type of hazard can be caused by bacteria & viruses?
      A. Physical
      B. Chemical
      C. Biological
      D. Allergan

4. Which of the following is related to environment management system?
      A. ISO 9000
      B. ISO 14000
      C. ISO 20000
      D. ISO 22000

5. What is the missing M in 4M's theory that includes Men, Materials and Methods?
      A. Maintenance
      B. Management
      C. Machines
      D. Mutual

6. Which of the following is related to periodic medical examination of employees handling food items?

A. Sanitation

B. Cleanliness

C. Hygiene

D. Equipment safety

7. What is accidental induction of substances in foods during handling, processing or storage?

A. Contaminant

B. Adulterant

C. Additive

D. Addict

KEY for MCQ's

Sr. #	Ans.	Sr. #	Ans.	Sr. #	Ans.	Sr. #	Ans.
1	D	2	A	3	C	4	B
5	C	6	C	7	A		