

National Vocational Qualification

Competency Standards

for

MEAT TECHNOLOGY – Level 3 (Meat Cutter/ Meat Packer/ Butcher)



National Vocational and Technical Training Commission, Islamabad

COMPETENCY STANDARDS

OF

MEAT TECHNOLOGY

Level - 3

(Meat Cutter/ Meat Packer/ Butcher)

**National Vocational and Technical Training
Commission, Islamabad**

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1. INTRODUCTION

The course aims at imparting basic knowledge and skills for the quality production of meat and meat products. The development of human resources for the industry is also part of it. Special attention is paid to the training of personnel for self-employment and creating awareness and competency in the meat processing. The focus shall be on developing competencies in good slaughter practices, handling of meat, production of quality meat and meat products, testing and quality control of meat and meat products. The course durations both minimum and maximum are one and four years respectively. It may also be provided by some institutes on a correspondence basis. To produce skilled manpower to cater the needs of meat industry, academia and research organizations are providing excellence in professional learning, guidance and research skills focusing on production, processing and quality of meat and meat products.

2. PURPOSE OF QUALIFICATION:

It is aimed at enabling students to develop a broad and in depth knowledge, skills and expertise on various aspect of meat science and technology including but not limited to Inspection, Animal slaughter and slaughtering techniques, cutting and grading of meat; Analysis of meat and meat products; Meat packaging techniques. The course conciliates theory to practical sessions to achieve the intended module outcomes.

3. CODE OF QUALIFICATION:

The International Standard Classification of Education (ISCED) is a framework for assembling, compiling, and analyzing cross-nationally comparable statistics on education and training, ISCED codes for these qualifications as assigned as follow:

ISCED Classification for Meat Technology level – 3	
Code	Description
000000000	National Vocational Certificate Level – 3 in Meat Cutter/ Meat Packer/ Butcher

4. QUALIFICATION DEVELOPMENT COMMITTEE

The following members participated in the qualifications development workshop from 14-18 March 2022 in Lahore:

S#	Expert Name	Designation / Department
1.	Mr. Muhammad Aasim	Assistant Director, NAVTTC Coordinator
2.	Mr. Muhammad Nasir Khan	Ex DD NAVTTC (SS&C Wing), DACUM Facilitator
3.	Mr. Jan Muhammad Amazai	Sluaghtering / Halal Supervisor (Beaf / Motton) Karachi
4.	Dr. Shinawar Waseem Ali	Associate Professor, Punjab University, Lahore
5.	Dr. Muhammad Sohaib	Assistant Professor, UVAS, Lahore
6.	Dr. Kashif Nauman	Assistant Professor, UVAS, Lahore
7.	Mr. Shakir Khan	Professional Quality Solutions Lahore
8.	Mr. Tayyab Tariq	K&Ns Foods, Raiwind Lahore
9.	Dr. Khurram Shahzad	Principal Scientific Officer PCSIR Lahore
10.	Dr. Sania Mazhar	Senior Scientific Officer PCSIR Lahore
11.	Dr. Naseem Zara	Scientific Officer PCSIR Lahore
12.	Mrs. Ammara Yasmeen	Scientific Officer PCSIR Lahore
13.	Mr. Muhammad Ahmad	Technical Auditor Halal Food Punjab, Lahore
14.	Ms Noreen Shehzadi	CBT&A Expert, Lahore, PTEVTA
15.	Mr. Mubeen Arshad	Quality Assurance Head YUM Group (Industry)

5. QUALIFICATION VALIDATION COMMITTEE

The following members participated in qualification review and validation workshop from 21 – 25 November, 2022 held at Park Lane Hotel, Lahore:

Sr.	Name	Designation
1.	Mr. Muhammad Nasir Khan	Ex DD NAVTTC DACUM Facilitator
2.	Ms. Saima Asghar	DACUM Expert, Lahore
3.	Mr. Muhammad Aasim	Assistant Director NAVTTC Coordinator
4.	Dr. Shinawar Waseem Ali	Associate Professor/Chairman, Department of Food Sciences, University of the Punjab, Lahore Ex-Quality Assurance Officer K&N Pakistan
5.	Mr. Ibrahim Anwar	Lecturer Food Technology, GCT Nowshera Representative KP-TEVTA
6.	Mr. Muhammad Shahzad Javed	Senior Research Officer, PBTE
7.	Mr. Muhammad Ahmad	Technical Auditor Halal Food Punjab, Lahore
8.	Dr. Ihtisham-Ul-Haq	Assistant Professor, Kauser Abdulla Malik School of Life Science, Forman Christian College (A Chartered University), Lahore
9.	Dr. Muhammad Sohaib	Assistant Professor, Dept. of Food Science and Human Nutrition, University of Veterinary and Animal Sciences, Lahore
10.	Dr. Kashif Nauman	Assistant Professor, Dept. of Meat Science and Technology, University of Veterinary and Animal Sciences, Lahore
11.	Dr. Tabussam Tufail	Assistant Professor, Department of Food Science and Human Nutrition, University of Lahore
12.	Muhammad Saeed Ahmed	Farm Manager, Farm Manager Office, University of Veterinary and Animal Sciences Lahore
13.	Mr. Shkir Manzoor	Manager Operations, Professional Quality Solutions, Lahore

6. ENTRY REQUIREMENTS

Entry requirements of these qualifications are level 2.

7. REGULATIONS FOR THE QUALIFICATION AND SCHEDULE OF UNITS

Not Applicable

8. PACKAGING OF THE QUALIFICATION

The national vocational qualifications are packaged as per the following:

LEVEL-3 (60 Credits) [20:80]

Meat Cutter/ Meat Packer/ Butcher

1. Implement quality and safety standards
2. Maintain cutting area
3. Perform physical inspection and grading of carcass
4. Prepare poultry meat cuts
5. Prepare goat/sheep meat cuts
6. Prepare cattle/buffalo meat cuts
7. Prepare fish meat cuts
8. Perform meat packaging as per manufacturing order

9. SUMMARY OF COMPETENCY STANDARDS

Code	Competency Standards	Theory Total (Hours)	Practical Total (Hours)	Total (Hours)	Credit (Hours)	Category
1.	Implement quality and safety standards	14	36	50	5	Generic
2.	Maintain cutting area	14	36	50	5	Core
3.	Perform physical inspection and grading of carcass	10	30	40	4	Core
4.	Prepare poultry meat cuts	15	75	90	9	Core
5.	Prepare goat/sheep meat cuts	20	90	110	11	Core
6.	Prepare cattle/buffalo meat cuts	20	90	110	11	Core
7.	Prepare fish meat cuts	15	75	90	9	Core
8.	Perform meat packaging as per manufacturing order	12	48	60	6	Core
TOTAL		120	480	600	60	

00000000. Implement Quality and Safety Standards

Overview

This Competency Standard identifies the competencies required to apply skills and knowledge to control quality. The trainee will be expected to apply quality control principles during meat processing at the workplace.

Competency Units	Performance Criterion
CU1. Perform work according to meat Safety Program	P1: Apply SOPs of meat safety program. P2: Check compliance of GHPs in meat handling.
CU2. Maintain meat quality aspects at workplace	P1: Check water supply and drain at cutting site. P2: Check electric supplies carefully. P3: Check proper functioning of hot water sterilizer P4: Shift meat hygienically at workplace. P5: Maintain hygienic preparation of meat carcass. .
CU3. Perform standard meat cutting techniques and cutting tools	P1: Check implementation of GMPs in all sections of the cutting process P2: Avoid mishandling in work area. P3: Identify meat cutting tools

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

1. Define a hazard.
2. Describe chemical, microbiological and physical hazards.
3. Define GMPs and GHPs
4. Define Operational Prerequisite Program (OPRP)
5. Describe preventive measures to control the happening of a hazard.
6. Know regulatory affairs regarding meat safety

Critical Evidence(s) Required

The candidate needs to produce the following critical evidence(s) to be competent in this competency standard:

1. Handle the meat hygienically

2. Apply safety principles

Tools and Equipment required

The tools and equipment required for this competency standard are given below:

Sr. No	Items
1.	PPEs
2.	Soap
3.	Dispenser

0721MT01. Maintain Cutting Area**Overview**

This Competency Standard covers the competencies required to select suitable area for meat processing to keep personal health and safety at the workplace according to the industry's approved guidelines, procedures, and interpret rules/regulations. The trainee will be expected to identify and use Personal Protective Equipment (PPE) according to the workplace requirements. The underpinning knowledge regarding personal safety will be sufficient to provide the basis for the job at the workplace.

Competency Units	Performance Criterion
CU1. Clean and sanitize cutting place	P1: Select and wear PPEs at workplace P2: Wash cutting area before and after processing. P3: Apply proper disinfectants, detergents etc.
CU2. Arrange standard cutting tools	P1: Clean cutting tools. P2: Place basic and additional tools needed for cutting.
CU3. Perform Scrubbing of cutting tools	P1: Arrange detergents, disinfectants, scrubbers for cleaning tools. P2: Check complete scrubbing of cutting tools. P3: Dry cutting tools after cutting process.

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

- Explain safety rules and regulations of the meat industry
- Enlist safety equipment in the processing area
- Interpret safety signs and symbols
- Describe safety-related Standard Operating Procedure/guidelines
- Define the area for meat cutting
- Describe risks associated with each operation in selected area
- Explain Current Good Manufacturing Procedures (CGMP) relating to a clean work environment
- Explain industry Standing Operating Procedures (SOPs) relating to a safe work environment
- Define cleaning and sanitation.
- Explain different cleaning techniques like dry cleaning, wet cleaning, cleaning in place, cleaning out of place etc.
- Describe principles underlying sanitation/ cleaning operations.
- Know suitability of cleaning operation in a certain machine, equipment and meat.
- Describe different types of sanitizers used in meat processing area.

- Describe different sanitizing/autoclaving equipment used in meat processing plants.
- Interpret purity and concentration of various cleaning agents.
- Know scaling of pipelines or surfaces and its remedy.
- Describe temperatures of different cleaning agents to be effective for sanitation process.

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) to be competent in this competency standard:

- Demonstrate use of Personal protection equipment (PPEs)
- Demonstrate cleaning, disinfection and sanitization

Tools and Equipment required

The tools and equipment required for this competency standard are given below:

Sr. No	Items
1.	Cleaning trolleys
2.	Cleaning hose pips, shower guns
3.	Conductivity meters, level switches, flow meters
4.	PPE's (Goggles, face shield, comical suite, chemical gloves)
5.	Disinfection liquid
6.	Pumps, Air Blowers
7.	Brushes, scrappers, sponge, vacuum pump

0721MT02. Perform Physical Inspection of Carcass**Overview:**

This Competency Standard covers the competencies required to check quality of raw meat cuts in accordance with the Current Good Manufacturing Practices (CGMP) as well as industry's approved guidelines and procedures. Quality assurance and control play an essential role in meat inspection process. The trainee will be expected to perform preventive measures for quality product as well as general housekeeping and maintenance of tools/equipment.

Competency Units	Performance Criterion
CU1. Apply physical quality checks of carcass	P1: Check temperature of carcass P2: Check color of meat carcass. P3: Check freshness and smell of meat carcass. P4: Check sizes of meat carcass. P5. Grade carcass. P6. Weigh the carcass.
CU2. Apply measures to prevent contamination	P1: Take precautionary measures to prevent contamination. P2: Control temperature and humidity to prevent microbial growth. P3: Follow color coding schemes for cutting boards. P4: Follow color coding schemes for cleaning equipment.

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

- Describe requirements to check quality of raw meat carcass.
- Define microorganisms, which are environment hygiene indicator.
- Define basic physical parameters for meat carcass.
- Define key sensory attributes of meat carcass.
- Describe types of differential testing for sensory evaluation.

Critical Evidence (s) Required

The candidates need to produce following critical evidence(s) in order to be competent in this competency standard:

- Describe physical parameters of meat
- Perform calibration of weighing scale

Tools and Equipment required

The tools and equipment required for this competency standard are given below:

Sr. No	Items
1.	Moisture analyzer
2.	Thermometers
3.	Weighing balance
4.	Container

0721MT03. Prepare Poultry Meat Cuts**Overview**

This Competency Standard covers the competencies required to select suitable procedure to prepare different meat cuts according to the industry's approved guidelines, procedures, and regulations. The trainee will be expected to identify and use appropriate way to cut meats.

Competency Units	Performance Criterion
CU1. Perform deboning	P1: Place meat carcass at cutting station. P2: Segregate meat carcass according to weight. P3: Select cutting tool. P4: Place carcass on conveyor/cutting board for deboning.
CU2. Perform cutting	P1: Place knife at angle as per required for meat cut. P2: Cut carcass into different parts (wing, breast, thigh etc). P3: Prevent exposure of meat cuts from pests, dust etc.
CU3. Handle meat waste material	P1: Collect meat waste in disposable waste bags. P2: Wash cutting area P3: Prevent cross contamination.
CU4. Wash cutting tools	P1: Use hot water to wash cutting tools. P2: Disinfect and dry cutting tools. P3: Store the cutting tools at designated place.

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

1. Define different meat cuts.
2. Differentiate rib, thigh, breast, wings.
3. Separate less common parts types (face, neck, liver and other organs)

Critical Evidence(s) Required

The candidate needs to produce the following critical evidence(s) to be competent in this competency standard:

1. Identify different meat cuts
2. Cut different meat cuts

Tools and Equipment required

The tools and equipment required for this competency standard are given below:

Sr. No	Items
1.	Cutting board
2.	Cutters
3.	Knives
4.	Cleavers
5.	Bone saw
6.	Slicer machine
7.	Steel sharpener (file)
8.	Chopping board (Teflon food grade)
9.	Chopping board (wooden)
10.	Hooks
11.	Hanging bars
12.	Weighing scale

0721MT04. Prepare Goat/Sheep Meat Cuts

Overview

This Competency Standard covers the competencies required to select suitable procedure to prepare different mutton meat cuts according to the industry's approved guidelines, procedures, regulations. The trainee will be expected to identify and use appropriate way to cut meats in sizes.

Competency Units	Performance Criterion
CU1. Perform cutting	P1: Place meat carcass at cutting station. P2: Segregate meat carcass according to weight. P3: Select cutting tools. P4: Place knife at angle as per required for meat cut. P5: Cut carcass different parts (loin, sirloin, thigh, shank, brisket etc.). P6: Cover meat cuts.
CU2. Perform deboning	P1: Place carcass on conveyor/cutting board for deboning. P2: Remove bone from various portions of mutton. P3: Inspect deboned carcass. P4: Separate rejected meat.
CU3. Handle meat waste material	P1: Collect meat waste in disposable waste bags. P2: Wash cutting area P3: Prevent cross contamination.
CU4. Wash cutting tools	P1: Use hot water to wash cutting tools. P2: Disinfect and dry cutting tools. P3: Store the cutting tools at designated place.

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

1. Define different meat cuts.
2. Describe chunk, shank, brisket, rib, short plate, flank, loin, sirloin, the round.
3. Explain uses of by- products
4. Define grading of meat
5. Define marbling
6. Describe meat types

Critical Evidence(s) Required

The candidate needs to produce the following critical evidence(s) to be competent in this competency standard:

1. Demonstrate meat cuts
2. Cut on saw cutter
3. Perform deboning

Tools and Equipment required

The tools and equipment required for this competency standard are given below:

Sr. No	Items
1.	Cutting board
2.	Cutters
3.	Knives
4.	Cleavers
5.	Bone saw
6.	Slicer machine
7.	Steel sharpener (file)
8.	Chopping board (Teflon food grade)
9.	Chopping board (wooden)
10.	Hooks
11.	Hanging bars
12.	Weighing scale

0721MT05. Prepare Cattle/Buffalo meat cuts**Overview**

This Competency Standard covers the competencies required to select suitable procedure to prepare different beef meat cuts according to the industry's approved guidelines, procedures, and interpret rules/regulations. The trainee will be expected to identify and use appropriate way to cut meats in sizes.

Competency Units	Performance Criterion
CU1. Perform cutting	P1: Place meat carcass at cutting station. P2: Segregate meat carcass according to weight. P3: Select cutting tools. P4: Place knife at angle as per required for meat cut. P5: Cut carcass different parts (loin, sirloin, thigh, shank, brisket etc.). P6: Cover meat cuts.
CU2. Perform deboning	P1: Place carcass on conveyor/cutting board for deboning. P2: Remove bone from various portions of beef. P3: Inspect deboned carcass. P4: Separate rejected meat.
CU3. Handle meat waste material	P1: Collect meat waste in disposable waste bags. P2: Wash cutting area P3: Prevent cross contamination.
CU4. Wash cutting tools	P1: Use hot water to wash cutting tools. P2: Disinfect and dry cutting tools. P3: Store the cutting tools at designated place.

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

1. Define different meat cuts.
2. Describe chunk, shank, brisket, rib, short plate, flank, loin, sirloin, the round.
3. Explain uses of by products
4. Define grading of meat

5. Define marbling
6. Describe meat types

Critical Evidence(s) Required

The candidate needs to produce the following critical evidence(s) to be competent in this competency standard:

1. Demonstrate meat cuts
2. Cut on saw cutter
3. Perform deboning

Tools and Equipment required

The tools and equipment required for this competency standard are given below:

Sr. No	Items
1.	Cutting board
2.	Cutters
3.	Knives
4.	Cleavers
5.	Bone saw
6.	Slicer machine
7.	Steel sharpener (file)
8.	Chopping board (Teflon food grade)
9.	Chopping board (wooden)
10.	Hooks
11.	Hanging bars
12.	Weighing scale

0721MT06. Prepare Fish Meat Cuts**Overview**

This Competency Standard covers the competencies required to select suitable procedure to prepare different fish meat cuts according to the industry's approved guidelines, procedures, regulations. The trainee will be expected to identify and use appropriate way to cut meats in sizes.

Competency Units	Performance Criterion
CU1. Perform fish scaling	P1: Select scaling tools. P2: Select scaling board P3: De-scale the fish by scrapping.
CU2. Perform skinning and deboning	P1: Place fish on conveyor/cutting board for deboning. P2: Remove skin as per need. P3: Debone various sections of fish. P4: Inspect deboned fish.
CU3. Perform cutting	P1: Take weighed fish on cutting board. P2: Cut into fillet and steaks.
CU4. Handle fish waste material	P1: Collect fish waste in disposable waste bags. P2: Wash cutting area P3: Prevent cross contamination.
CU5. Wash cutting tools	P1: Use hot water to wash cutting tools. P2: Disinfect and dry cutting tools. P3: Store the cutting tools at designated place.

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

1. Define different fish types.
2. Describe different fish cuts.
3. Describe uses of fish cuts.
4. Define gutting.
5. Explain scaling, skinning and deboning.
6. Define white meat.

Critical Evidence(s) Require

The candidate needs to produce the following critical evidence(s) to be competent in this competency standard:

1. Demonstrate fish cuts
2. Disinfect cutting area

Tools and Equipment required

The tools and equipment required for this competency standard are given below:

Sr. No	Items
1.	Cutting board
2.	Cutters
3.	Knives
4.	Cleavers
5.	Bone saw
6.	Slicer machine
7.	Steel sharpener (file)
8.	Chopping board (Teflon food grade)
9.	Chopping board (wooden)
10.	Hooks
12.	Weighing scale

0721MT07. Perform Meat Packaging as per order**Overview:**

This Competency Standard covers the competencies required to apply skills and knowledge to perform packaging of meat cuts as per industry's approved guidelines and procedures. Trainees will be expected to perform packaging of meat and meat cuts as per standard procedure in overwrap trays, boxes, tin pack, and containers for handling, warehouse storage & transport. The trainee must ensure general housekeeping and maintenance of equipment.

Competency Units	Performance Criterion
CU1. Receive packaging materials as per specifications	P1. Receive approved halal packaging material P2. Check lot number as per specifications. P3. Report to concerned.
CU2. Execute packing operations	P1: Select packaging technique. P2: Perform cleaning and disinfection of packing machine P3. Perform Longitudinal Seal (LS) and Transversal Seal (TS)
CU3. Verify label contents as per processing order	P1. Check labelling information P2. Verify printing quality and content as per standard. P3: Report Supervisor for non-conformance.
CU4. Make packaging for bulk handling for warehouses storage & shipping /transport	P1. Perform pelleting of packaged meat. P2. Ensure shrink wrapping of pellets.
CU5. Maintain chilling, freezing and storage conditions	P1. Keep packed meat cuts at required temperature. P2: Check cleaning and disinfection of chiller, freezer/ cold store P3. Monitor temperature and humidity of cold store.

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore he/she must be able to:

- Explain types of packaging materials.
- Define levels of packaging.
- Explain principles of package design.
- Describe types of seals and their inspection method.
- Demonstrate integrity of packaging materials.
- Define multi-layer packaging materials.

- Define leak test protocols.
- Describe types of packaging machine.
- Describe Labeling information
- Describe storage parameters for packaged products.

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Demonstrate Packaging levels
- Perform Dimensional measurements of Packaging material
- Demonstrate Storage parameters

Tools and Equipment required

The tools and equipment required for this competency standard are given below:

Sr. No	Items
1.	Containers
2.	Blister/strip machine
3.	Printing Machine
4.	Tertiary packing machine
5.	Capper
7	Metal detectors
8	Rejecters
9	Shrink machine
10	Tape sealers
12	Manual shrink
14	Vernier Caliper, Micrometer
15	Torque Meter
16	Cutting Blades
17	Weighing balance
19	Leak Tester

20	Manual Thermometer
21	Pressure Tester
22	Height Gauge
23	Wrapper
24	Sleeve
25	Labeller
26	Straw applicator
27	Pelletizers

LIST OF TOOL AND EQUIPMENT	
SR.NO	Tools
1.	Meat processing system with retort, pump, boiler, cooker, steamer, dehydrator, concentrator, separator, heat exchanger and all types, mixers, valves all type, actuators, thermocouples, transducers, flow meters, motors (induction & servo), conductivity meters, level switches, sensors type, angle encoders, VFD (variable flow drives), photocells, nozzles, gauges, Solenoid valves and operation, conveyors, weighing balance
2.	Chiller, compressors, RO (reverse osmoses), Filters.
3.	Refrigerator, cooling agents,
4.	Freezer, incubators
5.	Stoves
6.	Meat packaging system with filling and sealing, can seamer, shrink wrapper, stripper, case packer, labeler, cap applicators, case sealer, lifters, card board packer, milters
7.	Jack lift, fork lifter, hand jack's lifter, material moving lifters, hydraulic lifters, palletizers
8.	Trolley, liquid jacked tanks
9.	Wheeler
10.	Poly/temperature sealer, shrink machines, cylinders
11.	Cap sealer
12.	Pressure canner
13.	Pressure cooker
14.	Cap seal
15.	Oven
16.	Steam-jacketed kettle
17.	Smoking trays
18.	Meat grinder
19.	Stuffer/linker
20.	Silent cutter
21.	Brix refractometers (0-90° brix)
22.	Clinometers
23.	Electronic scales (0.1 gm. capacity)
24.	Consist meter/viscometer
25.	Vacuum pack machine
26.	Laboratory scale cabinet drier or forced draft oven
27.	Headspace gauge
28.	Test equipment – pH meter, centrifuge, moisture meter, color chart/colorimeter, texture meter
29.	Computer
30.	Firefighting equipment , fire extinguisher types and uses, fire hydrants, smoke detector, SCABA (Self containing and birthing apparatus), fire Alarms, manual and automatic emergency haters, safety shower, safety harness,
31.	First aid kit

32.	PPE – apron, face mask, gloves (chemical gloves, surgical, electrical & Steam gloves), gum shoes (rubber shoes) chemical suit, face shelled, safety helmet, air protectives, goggles
33.	Test equipment – pH meter, centrifuge, moisture meter, color chart/colorimeter, texture meter, ATP
34.	Computer system
35.	Weighing scales and balances of various capacities and sensitivities
36.	Dietetic scales (1 kg. capacity)
37.	Pairing knives
38.	Peelers
39.	Measuring spoons
40.	Measuring cups (solid)
41.	Measuring cups (liquid)
42.	Wrench, screw driver, belts, nuts and bolts, spanners(open, ring combinations) pallairs, L kays, star keys, stretched p allairs,
43.	Clocks/timer
44.	Mixing bowls, stainless steel
45.	Hard plastic chopping boards
46.	Thermometers of varying temperature range
47.	Glassware like cylinder, beaker, flask
48.	Jar liter
49.	Food processor set
50.	Wire baskets
51.	Casseroles stainless steel
52.	Saucepan, stainless steel
53.	Spoons, wooden
54.	Spoon, basting
55.	Paddles, wooden
56.	Food tongs
57.	Steamer
58.	Soaking container
59.	Fermented containers
60.	Utility trays
61.	Colanders, stainless steel
62.	Automatic can opener
63.	Can seam saw
64.	Can seam counter sink
65.	Can seamer
66.	Vacuum can sealer
67.	Capping machine
68.	Crown corking machine
69.	Form fill seal machine (a) 3 side sealing (b) Pillow type
70.	Cup filling & sealing machine
71.	Horizontal packing machine
72.	Twist wrap machine
73.	Fold wrap machine

