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Transforming the skill landscape



FICS

Sector Food Processing

Sub-Sector Fruits and Vegetables

Occupation Processing

Reference ID: FIC/Q0102, NSQF Level 4

Pickle Making Technician

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Shri Narendra Modi Prime Minister of India

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About this book

This book is designed to provide skill training and/or upgrade the knowledge and basic skills to take up the job of a 'Pickle Making Technician' in the 'Food Processing' sector. All the activities carried out by a specialist are covered in this course. Upon successful completion of this course the candidate will be eligible to work as Pickle Making Technician.

This Practical Guide is designed to enable training on practical content for the specific Qualification Pack (QP). Each National Occupational Standards (NOS) is covered across Unit/s.

Key Learning Objectives for the specific NOS mark the beginning of the Unit/s for that NOS.

- Prepare and maintain work area and process machineries for pickle making
- Prepare for pickle making
- Make pickle
- Complete documentation and record keeping related to pickle making
- Apply food safety and hygiene standards related to pickle making



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1. Introduction

Unit 1.1 -Organisational Standards and Norms

10 hrs



Key Learning Outcomes 🔯

At the end of this unit, you will be able to:

- 1. Execute the roles and responsibilities as per the organisation standard and norms
- 2. Demonstrate how to conduct yourself at the workplace
- 3. Demonstrate how to maintain personal hygiene and sanitation guidelines

UNIT 1.1: Organisational Standards and Norms

Unit Objectives 6



At the end of this unit, you will be able to:

- 1. Execute the roles and responsibilities as per the organisation standard and norms
- Demonstrate how to conduct yourself at theworkplace 2.
- 3. Demonstrate how to maintain personal hygiene and sanitation guidelines

1.1.1 Materials required for the practical

- Protectivegloves
- Head caps
- Aprons
- Safety goggles
- Safety boots
- Mouthmasks
- Sanitiser
- Safetymanual

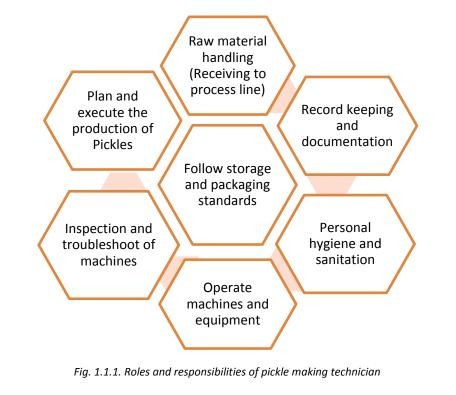
1.1.2 Practical

Pre-requisite knowledge:

Work flow chart and personal attributes.

Method:

1. Understand/ assign the roles and responsibilities to be followed as per the work flow chart given below.

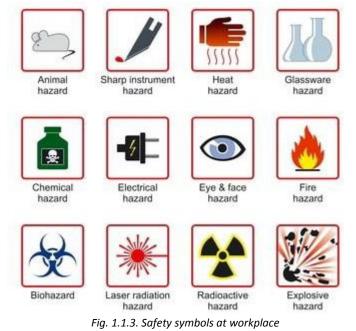


2. When at workplace you must wear the personal protective equipment following the way it is depicted in the picture given below.



Fig. 1.1.2. Personal Protective Equipment (PPE)

3. At workplace follow the safety instructions completely without any lapses.



Precautions:

- Make sure you are wearing safety gears.
- Do not waste the cleaning agent, sanitiser and water.
- Do not engage in smoking, spitting, chewing, sneezing or coughing over any food and eating in food preparation and food service areas.
- Report any illness or disease to the management and do not resume work unless treated and certified as fit to work.

Observation:

Sr no	Roles and responsibilities of Pickle making technician	Has the function being carried outas per specifications?
1		
2		
3		
4		
5		

Conclusion:

Based on the observations, write your conclusions here:

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Pickle Making Technician

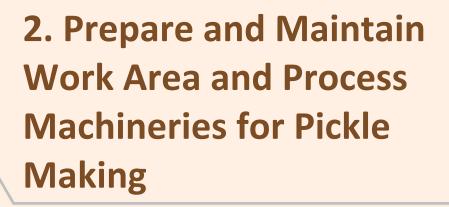




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Unit 2.1 -Prepare and Maintain Work Area15 hrsUnit 2.2 -Prepare and Maintain Process Machineries15 hrs

FIC/N0105



Food Industry Capacity and Skill Initiative

Key Learning Outcomes

At the end of this unit, you will be able to:

- 1. Demonstrate the appropriate method for cleaning and maintaining the work area
- 2. Exhibit that the work area is safe and hygienic for food processing
- 3. Check if the machines and tools required for production are in working condition
- 4. Clean process machineries using recommended cleaning agents and sanitisers

UNIT 2.1: Prepare and Maintain Work Area



At the end of this unit, you will be able to:

- 1. Demonstrate the appropriate method for cleaning and maintaining the work area
- 2. Exhibit that the work area is safe and hygienic for food processing

2.1.1 Materials required for the practical

- Cleaning agents (like detergents, hypochlorite, liquid chlorine, hydrogen peroxide, ozoneetc.)
- Sanitisers
- Disinfectants
- Floor area layout

2.1.2 Practical 🞇

Pre-requisite knowledge:

• Prepare and Maintain Work Area and Process Machineries.

Method:

• Mark food and non-food contact surfaces.

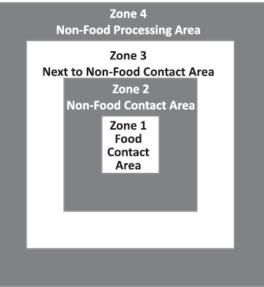


Fig. 2.1.1. Area Layout

- 1. Follow the cleaning and sanitisation SOP for work area cleaning.
- 2. Refer to the SOP and manufacturers' instructions for appropriate cleaning agents, sanitisers and cleaning procedure.
- 3. Take the tools, trolleys, crates, utensils etc. available at the processing unit to the designated areas for cleaning.
- 4. Rinse with potable water and cleaning agents to wash them perfectly.
- 5. Sterilise the tools and other equipment for next use with 500 ppm sodium hypochlorite or the recommended disinfectant as per the SOP.

- 6. Remove gross debris from surfaces of work area.
- 7. Apply detergent solution to loosen soil and bacterial film and hold them in solution or suspension.
- 8. Rinse with potable water to remove loosened soil and residues of detergent.
- 9. Disinfect with subsequent rinsing (where necessary) as per manufacturers' instruction.
- 10. Dry clean using appropriate methods like blow dry for removing and collecting the residue and debris. (For e.g.: loosened threads from dusters, crumbs and burnt products etc.)
- 11. Check pest control measures are in place and work area is pest free.
- 12. Check that water waste is going to an Effluent Treatment Plant (ETP).
- 13. Check that solid waste is properly going into the solid waste treatment plant or composting unit.
- 14. Place the sanitiser and disinfectant in the designated store area after using it.

Area/ item	Frequency	Equipment and cleaning agents and sanitisers	Cleaning method	Person responsible
		Structure		
Floors	End of each day	Brooms, damp	1.	
	or as frequently	mop, brush,	2.	
	required	detergent and	3.	
		sanitiser	4.	
Walls, Windows	Monthly or as	Wiping cloth,	1.	
and ceiling	required	brush and	2.	
		detergent	3.	
			4.	
		Food contact surface	25	
Work tables and	After use	Wiping cloth,	1.	
sinks		detergent and	2.	
		sanitiser	3.	
			4.	

Fig. 2.1.2. Sample work area cleaning SOP



Fig. 2.1.3. Cleaning materials

Fig.2.1.4. Pressure cleaning

Precautions:

- Always wear protective gloves and goggles when recommended.
- Before using hypochlorite, and liquid chloride, ensure that pH and concentration level is maintained as per the SOP.
- Ensure that the area is well ventilated while using hydrogen peroxide.
- Always read the instructions on the label before use, even if it's a product you use regularly. You don't want to accidentally use the product in the wrong area or use it incorrectly.
- Always note the warning symbols and safety precaution symbols displayed in the work area and follow them.
- Never store chemicals near food, food storage areas or any tools or equipment that will touch food. Keep them under lock in a designated area only for cleaning tools and chemicals.
- Never leave chemicals on or near a food preparation area. That includes on top of counters, stoves, etc.
- Do not store chemicals above food prep areas, kitchen sinks or drain boards.
- Store chemicals in their originally labelled containers and make sure they are closed properly.
- Never use food storage containers to store, transport or mix chemicals.
- Always spray chemicals holding the spray nozzle away from you.
- Never mix two different chemicals together.

Observation:

Sr no	Name of food contact surfaces cleaned	Name of cleaning agents used	Name of sanitisers used	Amount of cleaning agent used
1				
2				
3				
4				
5				

Conclusion:

Sr no	Activities conducted to make work area clean and safe	(Yes/No)
1	Identification of food and non-food contact surfaces	
2		
3		
4		
5		

UNIT 2.2: Prepare and Maintain Process Machineries

Unit Objectives

At the end of this unit, you will be able to:

- 1. Check if the machines and tools required for production are in working condition
- 2. Clean process machineries using recommended cleaning agents and sanitisers

2.2.1 Materials required for the practical

- Milling seperator
- Strapping machine

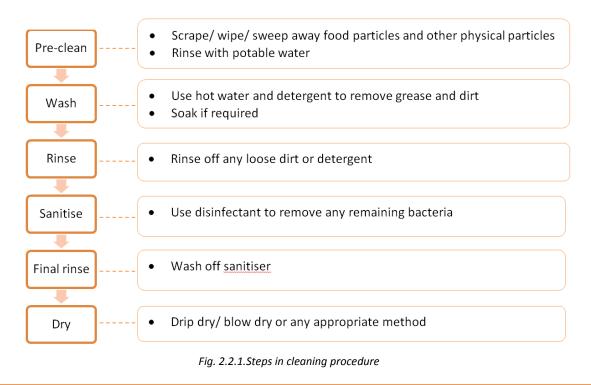
2.2.2 Practical

Pre-requisite knowledge:

• Prepare and Maintain Work Area and Process Machineries.

Method:

- 1. Prepare the list of machineries present in the processing unit.
- 2. Execute the cleaning of equipment and machineries as per the SOP.
- 3. Refer to the manufacturers' manual for recommended cleaning agents and sanitisers.
- 4. Execute CIP for the internal cleaning of the machines and equipment.
- 5. Carry out the COP for the parts like fittings, gaskets, valves, tank vents, grinders, pumps, knives and nozzles as per company SOP.
- 6. Carry out SIP process to sterilise, disinfect and sanitise the machineries.
- 7. If required apply high air pressure cleaning by removing the equipment parts and replacing them after cleaning.
- 8. Check for cleaning efficiency by swab test or rinse test.
- 9. Apply oil and grease to the required parts as part of routine maintenance



Precautions:

- Ensure machines are unplugged from the power source before cleaning.
- Make sure that after cleaning the machines and equipment are ready for use.
- Report any discrepancies in the equipment or machineries to the supervisor/ required authority.

Observation:

Sr no	Name of the activities	Time taken to conduct the process (hrs)
1		
2		
3		
4		
5		

Conclusion:

Sr no	Parts used for CIP	Parts used for COP	Parts used for SIP
1			
2			
3			
4			
5			

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3. Prepare for Pickle Making

Unit 3.1 - Planning Production	2 hrs
Unit 3.2 - Plan Equipment Utilisation for Production	4 hrs
Unit 3.3 - Organise and Check Equipment and Raw	4 hrs
Materials	



FIC/N0106

Key Learning Outcomes

At the end of this unit, you will be able to:

- 1. Demonstrate how to plan the production process
- 2. Demonstrate how to calculate the process time for effective utilization of machineries
- 3. Explain how to plan batch size considering full capacity utilization of equipment
- 4. Demonstrate the calculation of raw material required for getting desired quantity of finished product

UNIT 3.1: Planning Production

Unit Objectives

At the end of this unit, you will be able to:

1. Demonstrate how to plan the production process

3.1.1 Materials required for the practical

Production process chart

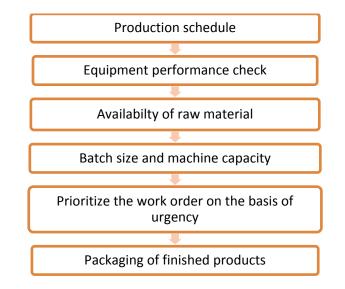
3.1.2 Practical

Pre-requisite knowledge:

• Prepare for Pickle Making.

Method:

1. Every organisationas a standard operating procedure (SOP) follows a production procedure:





- 2. Check the production schedule of the day and note it down in your notepad.
- 3. Check that required machineries are performing well and ready for production.
- 4. Check the availability raw materials.
- 5. Prioritise the lot which has to be delivered urgently as per the SOP and stock rotation system (FIFO and FEFO) as applicable.
- 6. Identify the packaging materials required as per the SOP. Once the product is ready, send it for packaging and storage.

Precautions:

- Follow the production schedule and the time for each process parameter as specified.
- Follow the SOP for the packaging material to be used.
- Follow the FIFO and FEFO stock rotation system as specified in the SOP/production schedule.

Observation:

Sr no	Planning steps	Equipment to be used	Time to finish the activity (hrs)
1			
2			
3			
4			
5			

Conclusion:

Sr no	Batch details	Batch size	Production time	Expected quantity of finished products (packaged lots)
1				
2				
3				
4				
5				

UNIT 3.2: Plan Equipment Utilization for Production

Unit Objectives Ø

At the end of this unit, you will be able to:

- 1. Demonstrate how to calculate the process time for effective utilisation of machineries
- 2. Explain how to plan batch size considering full capacity utilisation of equipment

3.2.1 Materials required for the practical

- Fruit/vegetable washing machine
- Roller conveyor
- Root vegetable peeler
- Shredding/dicing/cubing slicing machine
- Multifunction vegetable slicer/chopper
- Grading machine
- Plastic crates
- Blending machine
- Pickle filling machine for bottles
- Pickle filling machine for pouches
- Different types of vegetables
- Work flow diagram/chart
- SOP
- Food safety manual

3.2.2 Practical 🖄

Pre-requisite knowledge:

• Prepare for Pickle Making.

Method:

1. Identify the equipment and machines as per the SOP.



Fig.3.2.1.Roller conveyor Carries fruits and vegetables for further processes



Fig.3.2.2.Root vegetable peeler Equipped with rotating soft and hard brushes which thoroughly clean and peel



Fig. 3.2.3. Multifunction vegetable slicer/chopper Used to slice and chop vegetables, it is equipped with a chopping blade that produces fingersized cuts



Fig. 3.2.4. Grading machine Used to grade and sort fruits/ vegetables as per size



Fig. 3.2.5. Plastic crates Used to collect sorted raw materials for further processes



Fig. 3.2.6. Blending machine Equipped with a moving shaft that moves slowly and blends ingredients



Fig .3.2.7. Pickle filling machine for bottles Used to fill processed pickles into bottles. Removes air from the bottle during the filling process



Fig. 3.2.8. Pickle filling machine for pouches Used to fill, pack, and seal pickles in pouches

Capacity of the machine = x	Batch size = y	No. of times the machine to be operated for the given capacity = z

• 📃

2. Note down the machine capacity, batch size and the results of the calculations in the observation table.

Precautions:

- Select only the fruits/ vegetables which meet the quality parameters.
- Check the machineries are working properly before starting production.
- Wear the personal protective equipment during processing activities

Observation:

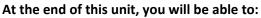
Sr no	Production size	Batch size	Machine or equipment to be used	No. of times the machine/equipment to be used	Duration of the process
1					
2					
3					
4					
5					

Conclusion:

Sr no	Batch size	Total production time	ls it as per schedule (Y/N)
1			
2			
3			
4			
5			

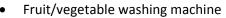
UNIT 3.3: Organise and Check Equipment and Raw Materials

Unit Objectives



1. Demonstrate the calculation of rawmaterial required for getting desired quantity offinished product

3.3.1 Materials required for the practical



- Roller conveyor
- Root vegetable peeler
- Shredding/dicing/cubing slicing machine
- Multifunction vegetable slicer/chopper
- Grading machine
- Plastic crates
- Blending machine
- Pickle filling machine for bottles
- Pickle filling machine for pouches
- Different types of vegetables
- Work flow diagram/chart
- SOP
- Food safety manual

3.3.2 Practical

Pre-requisite knowledge:

Prepare for Pickle Making

Method:

- 1. Identify the type of production line:
 - Automated production line
 - Semi-automated production line
 - Manual production line
- 2. Based on the type of production line plan the processing activities to calculate efficiency of equipment and manpower utilization.

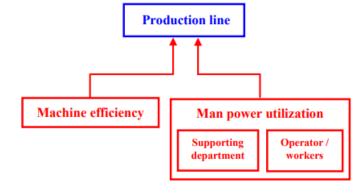


Fig. 3.3.1. Factors of production line

- 3. Calculate the machine efficiency using following formula given:
 - Actual Operation Time: Run time for a machine or system to produce an output from the moment it has started for operation.
 - Planned Operation Time: Actual run time of the machine removing all the stops during the operation (for eg: breakdowns, change over, etc.)
 - Machine Ideal Cycle Time: The minimum cycle time that your process can be expected to achieve in optimal circumstances.
 - Overall Equipment Efficiency: Takes into account all losses, resulting in a measure of truly manufacturing time. It gives a picture of how effective the manufacturing process is running.

	Formula to calculate machine efficiency	Machine efficiency
Availability (A) =	Actual Operation Time	
	Planned Operation Time	
Performance (P)	(Machine Ideal Cycle Time) X (Total Pieces Produced)	
=	(Planned Operation Time)	
Quality (Q) =	Good Pieces Produced	
	Total Pieces Produced	
Overall	AXPXQ	
Equipment		
Efficiency (OEE) =		

4. Calculate manpower utilisation for manual and semi-automatic production line in terms of operators/workers by using following formula:

Type of production line	Formula to calculate	Manpower utilization (M)
Manual	Actual Production Output Target Production Output	
Semi-automatic	(Machine Ideal Cycle Time) X (Total Pieces Produced) (Actual Operation Time) – (Machine Ideal Cycle Time) X (Total Pieces Produced)	
	M =	

- 5. Check that whether preventive maintenance is in place or not.
- 6. Enter all the details in the observation sheet.

Precautions:

- Use the raw materials which meet the quality parameters.
- Check the machineries are working properly.
- Wear the personal protective equipment during processing activities.

Observation:

Sr no	Selected fruits in the batch (Batch details)	Batch size (quantity)	Total soluble solid content (TSS)
1			
2			
3			
4			
5			

Conclusion:

Sr no	Batch details	Parameters as specified in the schedule (Y/N)	Can be considered for production (Y/N)
1			
2			
3			
4			
5			

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4. Pickle Making

Unit 4.1 - Receive, Wash and Sort Vegetables	8 hrs
Unit 4.2 - Peel and Slice Vegetables	8 hrs
Unit 4.3 - Prepare Brine Solution and Cure Vegetables	8 hrs
Unit 4.4 - Prepare and Pack Pickle	8 hrs
Unit 4.5 - Carry out Post Production Cleaning and Regular	8 hrs
Maintenance	



FIC/N0107

Key Learning Outcomes 💱

At the end of this unit, you will be able to:

- 1. Demonstrate the process of receiving, washing and sorting of fruits/ vegetables
- 2. Demonstrate the process of peeling and slicing of vegetables
- 3. Demonstrate the process of peeling and slicing of vegetables
- 4. Demonstrate the process of packing pickles
- 5. Carry out the post production cleaning and regular maintenance work

UNIT 4.1: Receive, Wash and Sort Vegetables

Unit Objectives Ø

At the end of this unit, you will be able to:

1. Demonstrate the process of receiving, washing and sorting of fruits/ vegetables

4.1.1 Materials required for the practical

- Moisture metre
- Refractro metre
- pH metre
- Fruit/vegetable washing machine
- Roller conveyor
- Grading machine
- Plastic crates

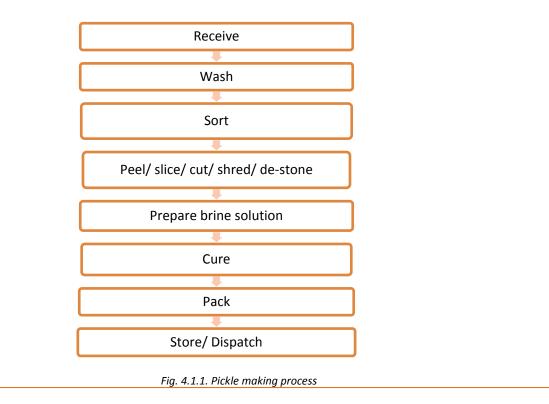
4.1.2 Practical 🖄

Pre-requisite knowledge:

• Pickle Making.

Method:

• Follow the steps as given below for pickle making of fruits/vegetables.



- 1. Physically inspect the transport vehicles/crates in which the raw materials are transported as per the acceptable quality standards in the SOP.
- 2. Check that the fruits/ vegetables received for pickle making is meeting the quality parameters as per the SOP.

Physical parameters	Chemical parameters
Colour	Less than 60.0 % drained mass (TSS)
Shape	Less than 2.0 % acidity (acetic acid)
Size	
Freshness/ maturity	
Texture	

3. Move the selected vegetables/fruits to the washing machine for cleaning the dirt and inert material.



Fig. 4.1.2. Fruit/vegetable washing machine

- 4. Collect the washed vegetables from the other end of the machine.
- 5. Repeat the steps4 and 5if required to completely wash the fruits/vegetables clean.
- 6. Move the fruits/vegetablesto grading and sorting table/machine.
- 7. Remove any rotten fruits/vegetables in the sorting process.
- 8. Check manually the uniformity and ripening of the fruits/vegetables.
- 9. Grade the fruits/ vegetables as per the SOP.
- 10. Weigh the rotten fruits/vegetables from the sorting process and record it.

Precautions:

- Avoid wastage of water during washing the vegetables.
- Remove rotten fruits/vegetables during sorting and grading process.

Observation:

Sr no	Name of the fruit/vegetables	Total weight received	Total weight after washing, sorting and grading (Kg)	Total weight of rotten fruits/vegetables (Kg)
1				
2				
3				
4				
5				
6				

Conclusion:

Washing time	Grading/sorting time	Grading/sorting (manually/machine)
	Washing time	Washing time Grading/sorting time

-

UNIT 4.2: Peel and Slice Vegetables

Unit Objectives

At the end of this unit, you will be able to:

1. Demonstrate the process of peeling and slicing of vegetables

4.2.1 Materials required for the practical

- Roller conveyor
- Root vegetable peeler
- Shredding/dicing/cubing slicing machine
- Multifunction vegetable slicer/chopper
- Grading machine
- Plastic crates

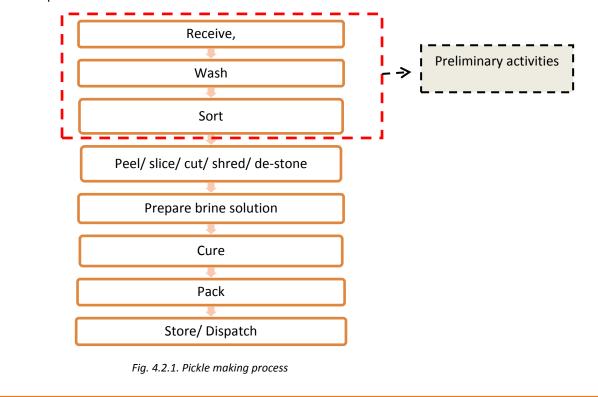
- 4.2.2 Practical 🖄

Pre-requisite knowledge:

Pickle Making

Method:

1. Check that the fruits/vegetables received for processing is meeting the quality parameters as per the SOP.



- 2. Depending on the nature of the raw material move the fruits/vegetables to the peeling/ cutting/ slicing/ de-stoning machine.
- 3. Remove the defective pieces physically.
- 4. The sliced or cut vegetables are ready to be cured.

Precautions:

• Ensure the size of slice is as per the SOP.

Observation:

Sr no	Name of the vegetables	Cut/Slice size
1		
2		
3		
4		
5		

Conclusion:

Write down your conclusion here:

Sr	
no	
1	
2	
3	
4	
5	

UNIT 4.3: Prepare Brine Solution and Cure Vegetables

Unit Objectives

At the end of this unit, you will be able to:

1. Demonstrate the process of peeling and slicing of vegetables

4.3.1 Materials required for the practical

- Plastic crates
- Containers/ barrel
- Salt
- Water

- 4.3.2 Practical 🖄

Pre-requisite knowledge:

Pickle Making

Method:

1. Move the washed, sorted, peeled and sliced vegetables for curing process.

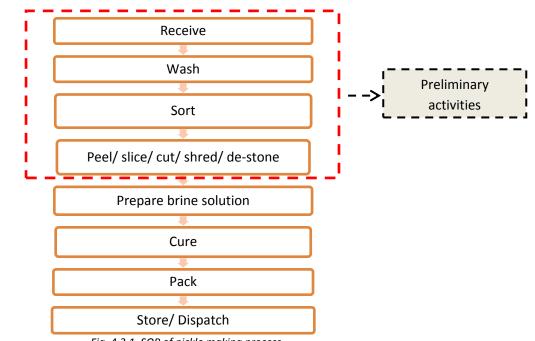


Fig. 4.3.1. SOP of pickle making process

- 2. Weigh the cleaned and cut vegetables.
- 3. Prepare the brine or salt solution at a ratio of two tablespoons of salt to 250 ml of water.
- 4. Immerse the cut vegetables in the brine solution (pH =7 at this stage).
- 5. Let vegetables in the brine solution ferment for 1 2 weeks naturally.
- 6. Mix cured vegetable periodically to ensure salt equilibrium.
- 7. Check the acidity periodically of the cured vegetable.
- 8. Ensure completion of fermentation process by checking the pH (pH between 2 to 4) as per FSSAI standards.

- 9. Draw samples from every lot as per the SOP for quality testing.
- 10. Send the samples with appropriate labels for quality testing.
- 11. Close and preserve the mixture in barrels/ containers.

Precautions:

- Ensure that fermentation process is completed.
- Refer to the SOP for sampling guidelines and sample lot size.
- Ensure that oil is not fill upto the brim.Leave some air space between top of the oil and cap of the jars.

Observation:

Sr no	Name of vegetables	Weight of peeled and sliced vegetable	Fermentation time (week)
1		Vegetable	
2			
3			
3			
4			
5			
6			

Conclusion:

Write down your conclusion here:

Sr no	
1	
2	
3	
4	
5	
6	

UNIT 4.4: Prepare and Pack Pickle

Unit Objectives

At the end of this unit, you will be able to:

1. Demonstrate the process of packing of pickles

4.4.1 Materials required for the practical

- Plastic crates
- Blending machine
- Ingredients for spice mixture
- Oil
- Packaging machine

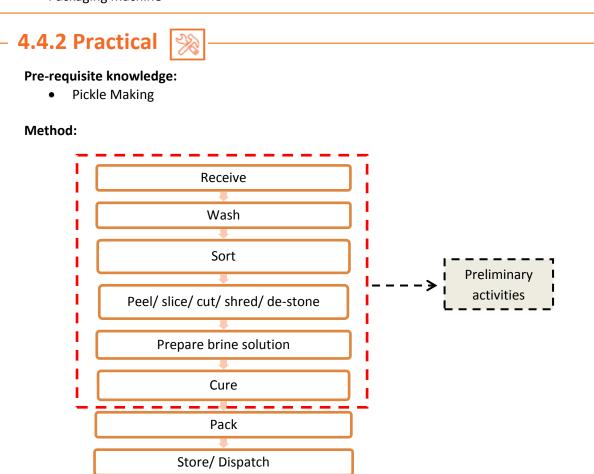


Fig. 4.4.1. SOP-Pickle packing process

- 1. Dip cured raw material in hot water to remove excess salt.
- 2. Drain the excess water.
- 3. Prepare spice mixture as per batch size, quantity of raw material, and ingredients.
- 4. Mix cured raw material, spices, ingredients, and oil in a blender.
- 5. Fill the mixture in appropriate packaging as per the SOP.
- 6. Put oil on top.
- 7. Cap/seal and label the packages.
- 8. The pickles are ready for dispatch or storage.
- 9. Send the finished products for dispatch or storage.

Mango Pickle

1. Select the mangoes meeting the following physio-chemical parameter:

Sr no	Ingredients	Composition
1	РН	2.87
2	Acidity (%)	2.50
3	Ascorbic acid (mg/100g)	128.00
4	Total sugar (%)	4.85
5	Reducing sugar (%)	3.98
6	Moisture (%)	79.80

- 2. Carry out the process of pickle making for different types of mango pickle.
- 3. Prepare spice mixture as per different recipe type, quantity of mango, and ingredients as given.

Sr no	Ingredients	Dry mango pickle	Sweet mango pickle	Oily mango pickle	Salty water mango pickle
1	Unripe mango pieces	1 kg	1 kg	1 kg	1 kg
2	Turmeric	25 gm	25 gm	25 gm	25 gm
3	Mustard seeds	50 gm	50 gm	50 gm	50 gm
4	Ani seed	20 gm	20 gm	20 gm	20 gm
5	Black pepper	15 gm	15 gm	15 gm	15 gm
6	Asafoetida	5 gm	5 gm	5 gm	5 gm
7	Methi	75 gm	75 gm	75 gm	75 gm
8	Nigella	10 gm	10 gm	10 gm	10 gm
9	Red chilli powder	20 gm	20 gm	20 gm	20 gm
10	Fennel seeds	10 gm	10 gm	10 gm	10 gm
11	Cardamom	15 gm	15 gm	15 gm	15 gm
12	Cumin seeds	10 gm	10 gm	10 gm	10 gm
13	Fenugreek seeds	20 gm	20 gm	20 gm	20 gm
14	Salt	150 gm	150 gm	150 gm	150 gm
15	Mustard oil	50 ml		50 ml	50 ml
16	Sugar		500 gm		

Lime pickle

- 1. Select the lemons meeting the quality parameters.
- 2. Carry out the process of pickle making for lime pickle.
- 3. Prepare spice mixture as per the composition, quantity of lime, and ingredients as given.

Sr no	Ingredients	Composition
1	Lemons ripe and juicy	6
2	Sugar	1 cup
3	Salt - 1 tbsp	1 table spoon
4	Fenugreek seeds	Fenugreek seeds
5	Fennel seeds	½ tea spoon
6	Nigella seeds (kalonji)	½ tea spoon
7	Turmeric powder	1/2 table spoon

Sr no	Ingredients	Composition
8	Mustard seeds crushed coarsely	½ table spoon
9	Chili powder red	2 table spoons
10	Asafoetida	½ tea spoon
11	Oil	½ tea spoon

Carrot pickle

- 1. Select the carrots meeting the quality parameters.
- 2. Carry out the process of pickle making for carrot pickle.
- 3. Prepare spice mixture as per the composition, quantity of carrots, and ingredients as given below.

Note: The quantity of ingredients given is for a sample quantity. For preparation of large quantities the same ingredients can be multiplied proportionately.

Sr no	Ingredients	Composition
1	Carrots	3 large, thickly sliced and chopped – approximately 250 gms
2	Ginger	2 inches, thinly sliced
3	Mustard seeds	3/4 tea spoon
4	Red Chilli powder	2 teaspoons
5	Curry leaves	10
6	Roasted and powdered fenugreek seeds	1/4 tea spoon
7	Turmeric powder	½ table spoon
8	Mustard seeds crushed coarsely	1 tea spoon
9	Salt	1 table spoon
10	Asafoetida	1/4 tea spoon
11	Oil	5 tea spoon
12	White Vinegar	1 teaspoon
13	Lemon juice	of 2 medium sized

Types of Packaging	Primary Packaging	Secondary Packaging	Tertiary Packaging	Transit Packaging
Meaning	 Comes in direct contact with the food and holds the product and features labeling 	 Creates ease of manual movement of products 	 Used for long distance transportatio n and distribution 	 Used to bundle the boxes or crates for ease of transportation and distribution overseas
Packaging Materials	 Glass bottle/jars Wooden barrels/casks Tin containers/ cans Chinaware jars 	 Cardboard box Polythene Paper bags Small cartons boxes 	Large carton boxes	 Palletised crates Large carton

Types of Packaging	Primary Packaging	Secondary Packaging	Tertiary Packaging	Transit Packaging
Packaging Materials	 Aluminium foil Polythene bags/lining Cellophane paper Plastic bottles/ containers/cra tes Sanitary cans Lacquered cans Thermocol Thermoformed plastic bottle Paper products (bags, boxes etc.) 			
Products Packed	 Fruit juices, pulps, concentrates, jam, jellies, marmalades, squashes, crush, syrup Canned fruits Pickles Harvested fruits and vegetables 	 Nuts Fruits Vegetables 	All products	All products



Precautions:

• Prepare the spice mixture as per the recommendation only.

Observation:

Write down the steps and precautions followed to mango/lime pickle making process.

Sr no	Steps	Precautions
1		
2		
3		
4		
5		
6		

Conclusion:

Write down your conclusion here:

C	
Sr	
no	
1	
-	
2	
3	
5	
4	
5	
5	
6	

UNIT 4.5: Carry out Post Production Cleaningand Regular

Maintenance



At the end of this unit, you will be able to:

1. Carry out the post production cleaning and regular maintenance work

4.5.1 Materials required for the practical

- Cleaning agents (like detergents, hypochlorite, liquid chlorine, hydrogen peroxide, ozone etc.)
- Sanitisers
- Disinfectants
- Floor area layout



Fig. 4.5.1. Tool box

4.5.2 Practical

Pre-requisite knowledge:

Pickle Making

Method:

- 1. Follow the cleaning and sanitisation SOP for work area cleaning.
- 2. Refer to the SOP and manufacturers' instructions for appropriate cleaning agents, sanitisers and cleaning procedure.
- 3. Take the tools, trolleys, crates, utensils etc. available at the processing unit to the designated areas for cleaning.
- 4. Rinse with potable water and cleaning agents to wash them perfectly.
- 5. Sterilize the tools and other equipment for next use with 500 ppm sodium hypochlorite or the recommended disinfectant as per the SOP.
- 6. Remove gross debris from surfaces of work area.
- 7. Apply detergent solution to loosen soil and bacterial film and hold them in solution or suspension.
- 8. Rinse with potable water to remove loosened soil and residues of detergent.
- 9. Disinfect with subsequent rinsing (where necessary) as per manufacturers' instruction.
- 10. Dry clean using appropriate methods like blow dry for removing and collecting the residue and debris. (for eg: loosened threads from dusters, crumbs and burnt products etc.)
- 11. Check pest control measures are in place and work area is pest free.
- 12. Check that water waste is going to an Effluent Treatment Plant (ETP).
- 13. Check that solid waste is properly going into the solid waste treatment plant or composting unit.
- 14. Clean and sanitise the work area again.
- 15. Place the sanitiser and disinfectant in the designated store area after using it.
- 16. Prepare the list of machineries present in the processing unit.
- 17. Execute the cleaning of equipment and machineries as per the SOP.
- 18. Refer to the manufacturers' manual for recommended cleaning agents and sanitisers.

- 19. Execute CIP for the internal cleaning of the machines and equipment.
- 20. Carry out the COP for the parts like fittings, gaskets, valves, tank vents, grinders, pumps, knives and nozzles as per SOP.
- 21. Carry out SIP process to sterilise, disinfect and sanitise the machineries.
- 22. If required apply high air pressure cleaning by removing the equipment parts and replacing them after cleaning.
- 23. Check for cleaning efficiency by swab test or rinse test.
- 24. Apply oil and grease to the required parts as part of routine maintenance.

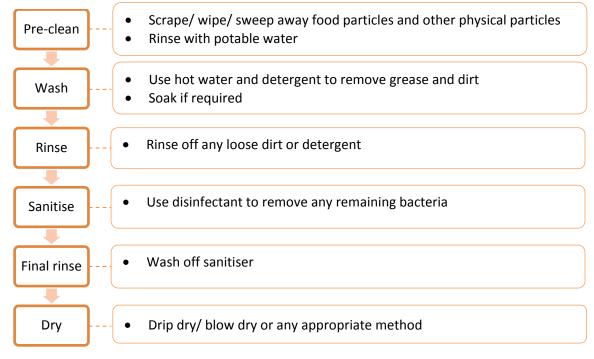


Fig. 4.5.2. SOP-Post production cleaning and regular maintenance process

Precautions:

- Ensure machines are unplugged from the power source before cleaning.
- Make sure that after cleaning the machines and equipment are ready for use.
- Report any discrepancies in the equipment or machineries to the supervisor/ required authority.
- Make sure cleaning agents and sanitisers are used judiciously.
- Wash your hands with sanitisers after cleaning and maintenance activity.

Observation:

Sr no	Work area cleaning (post production)	Cleaning done (Yes/no)
1		
2		
3		
4		
5		

Sr no	Machines/equipment cleaning (post production)	Cleaning done (Yes/no)
1		
2		
3		
4		
5		

Conclusion:

Write your conclusion here.

Sr	
no	
1	
2	
3	
4	
5	

Notes	





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5. Complete Documentation and Record Keeping Related to Pickle Making

Unit 5.1 - Raw Material Records	1 hr
Unit 5.2 - Production Schedule and Process Parameters	2 hrs
Unit 5.3 - Finished Products Records	2 hrs

FIC/N0108



Food Industry Capacity and Skill Initiative

Key Learning Outcomes

At the end of this unit, you will be able to:

- 1. Demonstrate the process of maintaining documentation for raw materials
- 2. Execute the process of documenting production schedule and process parameters
- 3. Execute the process of documenting details of finished products

UNIT 5.1: Raw Material Records

Unit Objectives Ø

At the end of this unit, you will be able to:

1. Demonstrate the process of maintaining documentation for raw materials

5.1.1 Materials required for the practical

- Raw material/stock register
- Processing book/register
- Sales book
- Weighing machine
- Hygrometer
- Refractrometer

5.1.2 Practical 🖄

Pre-requisite knowledge:

• Complete documentation and record keeping.

Method:

Production unit has three types of register/book.



- 1. Maintain the details of raw materials available at the production unit or plant in the stock register
- 2. Use the observation table and enter the details of the raw materials.
 - Enter the type of raw materials available at the plant.
 - Weigh the raw materials on weighing machine.
 - Enter the weight of each raw material in the stock register.

Precautions:

- Make sure that you make the correct entry after checking the raw materials physically.
- Ensure all records are up-to date as per SOP and are always ready for audits.

Observation:

Sr no	Type of raw material	Moisture Content	Weight of raw materials
1			
2			
3			
4			
5			

Conclusion:

Stock register updated for the following raw materials:

Sr no	Type of raw material
1	
2	
3	
4	
5	

-

UNIT 5.2: Production Schedule and Process Parameters

Unit Objectives 0



At the end of this unit, you will be able to:

1. Execute the process of documenting production schedule and process parameters

5.2.1 Materials required for the practical

- Process manual
- Production schedule
- **Production register**

5.2.2 Practical

Pre-requisite knowledge:

Complete documentation and record keeping.

Method:

Follow the production schedule:



Fig. 5.2.1. SOP - Production Schedule and Process Parameters

- 1. Refer the production schedule and enter the batch number of products in the production register which needs to be processed on the given date.
- 2. Check the machines available for processing of that lot as per the schedule.
- 3. Refer to the quality parameter chart and ensure that quality of the ingredients are checked and as per the accepted quality standards.
- 4. Enter the inputs of products in the respective register as per the SOP.
- 5. Enter the inputs of the products in the observation table.

Precautions:

- Ensure that the entries do not have any incorrect inputs by doing a thorough check.
- Ensure all records are up-to date as per SOP and are always ready for audits.

Observation:

Sr no	Production steps	Time taken at each step	Initial quantity of raw material	Final quantity of finished products
1				
2				
3				
4				
5				
6				

Conclusion:

Sr no	Raw material	Raw material quantity	Final quantity
1			
2			
3			
4			
5			

1

UNIT 5.3: Finished Products Records

Unit Objectives



At the end of this unit, you will be able to:

1. Execute the process of documenting details of finished products

5.3.1 Materials required for the practical

- Finished goods register
- **ERP Software**

5.3.2 Practical

Pre-requisite knowledge:

Complete Documentation and Record Keeping. •

Method:

- 1. Record the details of finished goods in the finished goods register.
- 2. Enter the details of finished goods in the ERP software, if available.
- 3. Maintain appropriate records of raw material receipt, stock of existing raw material, production, storage, distribution, service, laboratory test results, cleaning and sanitation, pest control and product recall etc. according to the SOP.
- 4. Retain the updated records for a period of one year or till shelf-life of the product whichever is more (as per the SOP) for periodic audits.

List of records as mandated under Part 2 of Schedule 4 of Food Safety & Standards (Licensing & Registration of Food Businesses) Regulation, 2011 are:

Sr. No.	Records for	Clause	Requirement			
1	Facilities	4.1.3	Water storage tanks shall be cleaned periodically and records of the same shall be maintained in a register			
2	Food operations and controls	5.1.3	Records of raw materials, food additives and ingredients as well as their source of procurement shall be maintained in a register for inspection			
3	Audit, documentation and records	8.2	Appropriate records of food processing / preparation, production / cooking, storage, distribution, service, food quality, laboratory test results, cleaning and sanitation, pest control and product recall shall be kept and retained for a period of one year or the shelf-life of the product, whichever is more			
4	Sanitation and maintenance of establishment premises	9.1.1	A cleaning and sanitation programme shall be drawn up and observed and the record thereof shall be properly maintained, which shall indicate specific areas to be cleaned, cleaning frequency and cleaning procedure to be followed, including equipment and materials to be used for cleaning. Equipment used in manufacturing will be cleaned and sterilized at set frequencies			

Practical Guide

Sr. No.	Records for	Clause	Requirement
5	Sanitation and maintenance of establishment premises	9.2.3	Pest infestations shall be dealt with immediately and without adversely affecting the food safety or suitability. Treatment with permissible chemical, physical or biological agents, within the appropriate limits, shall be carried out without posing a threat to the safety or suitability of food. Records of pesticides / insecticides used along with dates and frequency shall be maintained
6	Personal hygiene	10.1.2	Arrangements shall be made to get the food handlers / employees of the establishment medically examined once in a year to ensure that they are free from any infectious, contagious and other communicable diseases. A record of these examinations signed by a registered medical practitioner shall be maintained for inspection purpose
7	Personal hygiene	10.1.3	The factory staff shall be compulsorily inoculated against the enteric group of diseases as per recommended schedule of the vaccine and a record shall be kept for inspection
8	Condition of license	8	Maintain daily records of production, raw materials utilization and sales separately
9	Condition of license	14	The manufacturer/importer/distributor shall buy and sell food products only from, or to, licensed/registered vendors and maintain record thereof

- Check the packaging of the finished goods is as per the SOP.
- Check the labels of the finished goods for all the required entries as per the SOP and FSSAI guidelines.
- Enter the details of the finished goods register/ ERP application as per the SOP.
 - Enter the date of packing.
 - Enter the date of manufacture.
 - Enter the date of expiry.
 - Mention the primary, secondary and tertiary packaging materials.
 - Mention the storage conditions as per organisation standards for light, air and temperature and humidity.
- Use the observation table and enter the details of the finished goods.

Precautions:

• Ensure that the entries do not have any incorrect inputs by doing a thorough check.

Observation:

Sr no	Name of finished products	Batch number	Time of packing	Date of manufacture	Date of expiry	Packing materials used	Storage conditions
1							
2							
3							
4							
5							

Conclusion:

Finished goods register updated for the following processed products:

Products
-

Practical Guide		
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Transforming the skill landscape

FOOD Industry Capacity and Skill Initiative

6. Food Safety, Hygiene and Sanitation for Processing Food Products

Unit 6.1 - Safety and Sanitation Functions	5 hrs
Unit 6.2 - Food Safety Hazards	15 hrs
Unit 6.3 - Apply Food Safety Practices	15 hrs

FIC/N9001



Key Learning Outcomes

At the end of this unit, you will be able to:

- 1. Demonstrate the process of maintaining personal hygiene and sanitation
- 2. Identify the agents which are a potential food hazard and can cause adverse health effects
- 3. Demonstrate and apply food safety practices at workplace

UNIT 6.1: Safety and Sanitation Functions

Unit Objectives Ø

At the end of this unit, you will be able to:

1. Demonstrate the process of maintaining personal hygiene and sanitation

6.1.1 Materials required for the practical

- Cleaning agents
- Sanitisers
- PPE
- Food safetymanual
- First aid box
- Tool box

6.1.2 Practical 🖄

Pre-requisite knowledge:

• Food safety, hygiene and sanitation

Method:

Personal hygiene

- 1. Personal cleanliness of food handlers is the most important link in preventing foodborne illness.
- 2. These personal hygiene habits become a part of their behaviour.
- 3. Wear suitable clean protective clothing, head covering, face mask, gloves and footwear

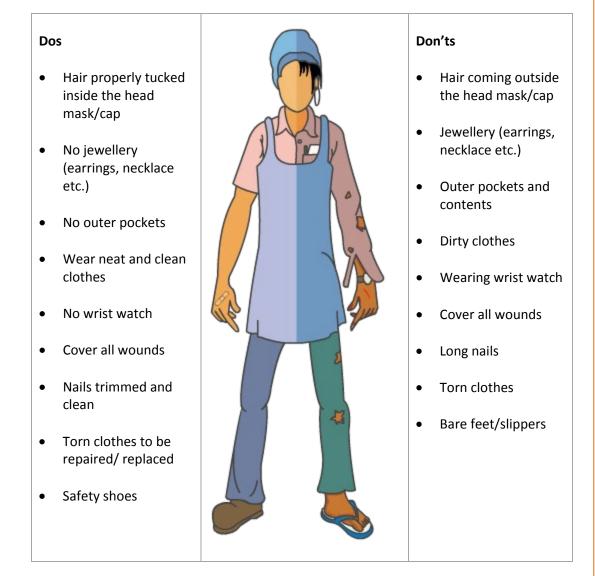


Fig. 6.1.1. Behavioural practices for food handlers – do's and don't's

- 1. Always clean your hands before beginning work, before handling food and after any activity which may contaminate the food and equipment you are working with.
- 2. Follow the six simple steps as given for hand sanitation.

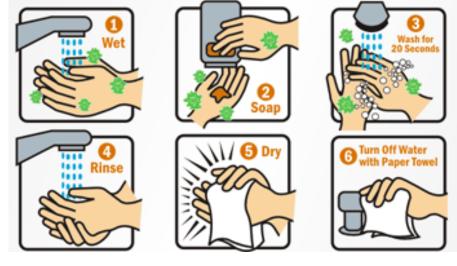
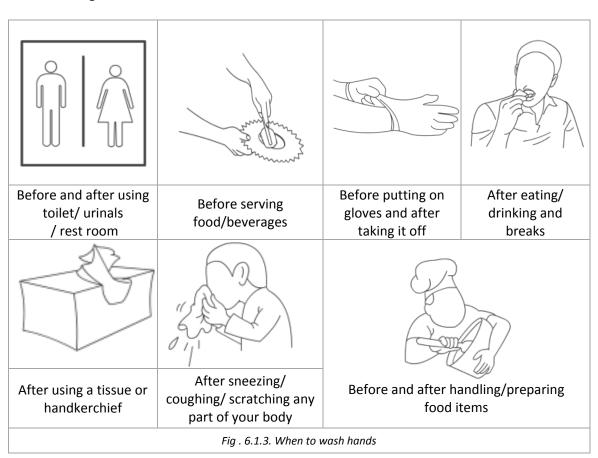


Fig . 6.1.2. Hand sanitation

Pickle Making Technician

3. Follow the guidelines when to wash hands.

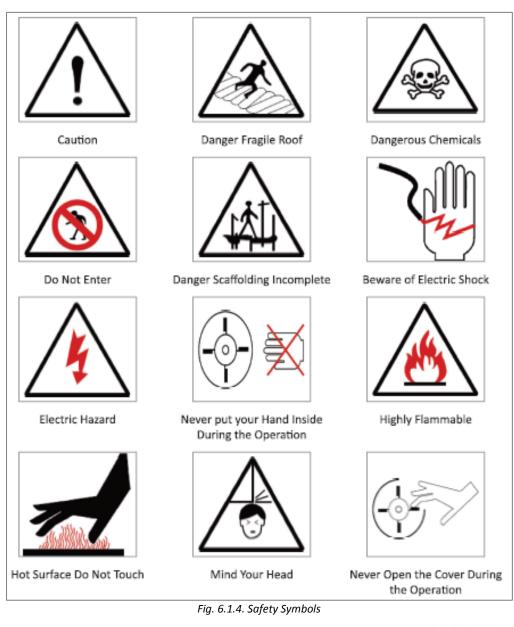


Raw material procurement

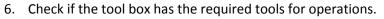
- 1. Check all raw materials for visible deterioration, off-odour and for any foreign matter while receiving and storing.
- 2. Raw materials received in tankers to be checked for seal integrity and only dedicated tankers to be used.
- 3. Check if the raw materials quantities purchased correspond to storage/preservation capacity of the establishment (follow the SOP).
- 4. Check for 'expiry date'/ 'best before'/ 'use by date, packaging integrity and storage conditions for packaged raw materials.

Safety symbols and warnings

1. Read the safety symbols, warnings and instructions very carefully.



- 2. Before entering into the work area, check that it is not under the prohibited zone.
- 3. Wear the personal protective equipment before entering the processing line.
- 4. After entering the working zone, check that required machineries are working properly.
- 5. Before starting the machine, ensure that machines are plugged to the electric circuit properly.



7. Ensure the first aid box is placed at the appropriate place and contains all the necessary medicines and equipment.



Fia. 6.1.5. First Aid Box

Precautions:

- 1. Follow the safety instructions completely.
- 2. Maintain proper hygiene and sanitation at workplace.
- 3. Report to the concerned person during any emergency and don't panic.
- 4. Do not receive or use raw material or ingredients that are spoilt or contain pesticides, veterinary drugs or toxic items or decomposed for processing.

Observation:

Sr no	Materials	Availability and maintenance
1.	List of PPE	
2.	List of Cleaning agents	
	List of warnings and symbols present	
3.	at workplace	

Sr no	Materials	Availability and maintenance
4.	Contents of the tool box	
5.	Contents of the first aid box	

Conclusion:

Write your conclusions here.

Why safety at workplace is very important?
Are the necessary PPEs available to carry out the work? (Y/N)
Are the cleaning agents (sanitisers, soaps, etc.) available at workplace? (Y/N)
Are the safety and warning symbols displayed at the workplace? (Y/N)
Is the first-aid kit available with necessary medical aid? (Y/N)

-

UNIT 6.2: Food Safety Hazards

Unit Objectives

At the end of this unit, you will be able to:

1. Identify the agents which are a potential food hazard and can cause adverse health effects

6.2.1 Materials required for the practical

- PPE
- Food safetymanual
- Food samples

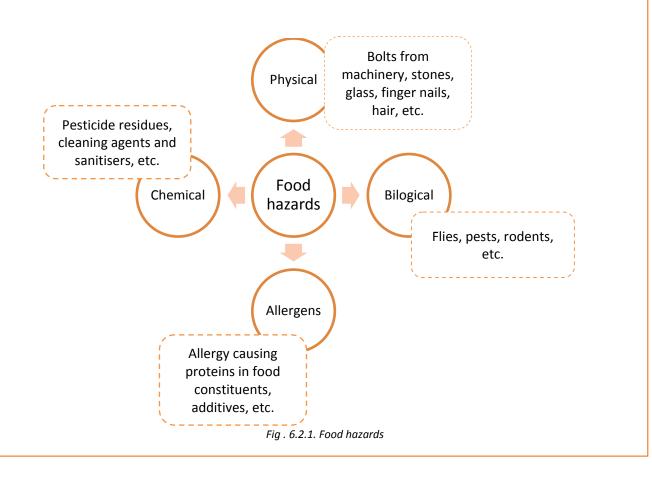
6.2.2 Practical

Pre-requisite knowledge:

• Food safety, hygiene and sanitation.

Method:

- 1. Identify the type of hazards in food.
- 2. Check for the possible hazard in the entire process of preparing baked products.



Cerals containing	Eggs and	Fish and fish	Tree nuts and
gluten	egg products	products	nut products
		ACCIEVE BURGES	
Peanuts soyabeans	Crustacea and its	Sulphite in	
and its products	products	concentrations of 10mg/kg or more	Milk products
	Fig . 6.2.2.	Food allergens	
	5		
Fig Chemical Pe	hir, excreta, bone splinters,		
	. 6.2.4. Chemical contaminants Its from machinery, stones	glass, etc.	
	. 6.2.5. Physical contaminants		
	of incoming raw materials		
5. Handle the dama receipt.	appropriate (follow SOP) t aged containers appropriat	ely as per SOP to minimise	-

6. Store allergenic ingredients separately or in the designated storage area using clean and closed containers to minimise cross contamination.

- 7. Check whether the allergens are declared on labels, for all products, including rework, and intermediate products.
- 8. Use appropriate cleaning methods for e.g. vacuum, soap and water wash, appropriate chemicals) and hand washing at appropriate times (for e.g. after handling a product containing allergens like peanuts etc., clean clothing and other PPE as specified in the SOP.
- 9. Note down the observations in the observation table.

Precautions:

- Do not store allergens and non-allergens materials together.
- Use safe practices while checking inside the equipment.
- Ensure adequate lighting at all processing and storage area while working.
- Ensure the traffic patterns of raw materials, packaging supplies, and employees are limited during the production of allergen containing products and do not lead to cross-contact.
- Document and use appropriate cleaning procedures for spills or damages of allergens.
- Use dedicated pallets and bins for allergen materials.

Observation:

Sr no	Sample description	Checklist	Observations	Action taken
1		Packing intact/ damaged?		
		Any food contaminants found?		
		Any allergens?		
		Information on the labels as per FSSAI guidelines?		
2		Packing intact/ damaged?		
		Any food contaminants found?		
		Any allergens?		
		Information on the labels as per FSSAI guidelines?		

Conclusion:

Write your conclusions here:

Sr no	Conclusion
1	

-

ç.

UNIT 6.3: Apply Food Safety Practices

Unit Objectives

At the end of this unit, you will be able to:

1. Demonstrate and apply food safety practices at workplace

6.3.1 Materials required for the practical

- PPE
- Food safetymanual
- Food samples

6.3.2 Practical

Pre-requisite knowledge:

• Food safety, hygiene and sanitation.

Method:

- Every manufacturing / processing unit should have a Food Safety Management System (FSMS) Plan.
- The purpose of FSMS is to ensure the manufacture, storage, distribution and sale of safe food.

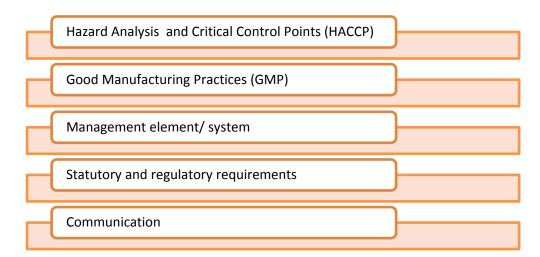
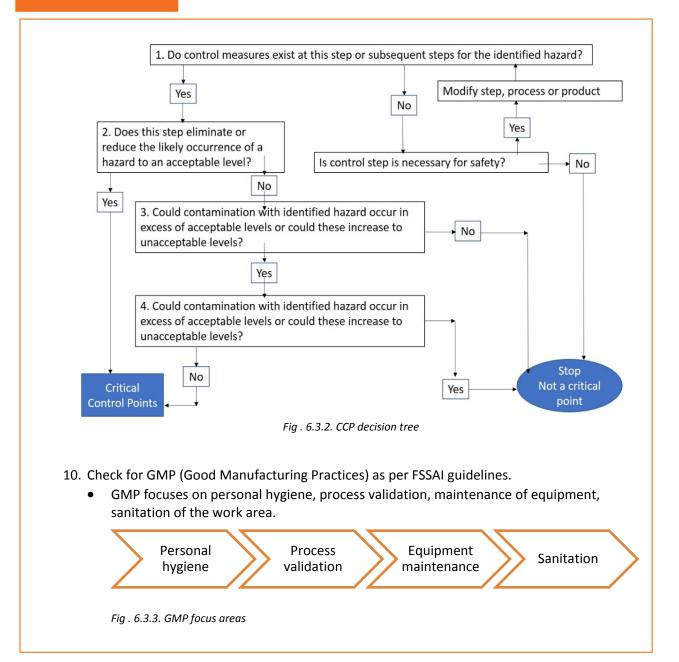


Fig. 6.3.1. Key elements of FSMS

- 1. As per HACCP principle,
 - Conduct hazard analysis to identify the types of hazard
 - Identify the critical control points.
- 2. Determine the critical control points (CCP).
- 3. Analyse the CCP at for each step in the production or process.
- 4. Refer to the critical limits from safety manual (organisation specific).
- 5. Establish the critical limits.
- 6. Monitor the critical limits using the monitoring systems.
- 7. Apply corrective measures to control the specified limits.
- 8. Enter the observation records in the log book.
- 9. Enter the CCP for raw materials in the observation table.



	GMP checklist	
Sr. No.	Focus area	Observation and remarks
1	LOCATION AND LAYOUT OF FOOD ESTABLISHMENT	
	Ideally located away from industries which are emitting	
	harmful gases, obnoxious odour, chemical etc.	
	Ceiling roof is of permanent nature floor of building is	
	cemented, tiled or laid in stone/ pakka floor	
	Production area walls are smooth, made with impervious	
	material up to a height of not less than five feet and the	
	junction between the walls and floors are curved	
	 Premises of the factory is adequately lighted and ventilated, properly white washed or painted 	
	 Provision for disposal of refuse and effluents is available 	
	 Food production/ food service area provided with 	
	adequate drainage facility	
	 Proper outlets for smoke/ steam etc., like chimney, exhaust 	
	fan etc. are installed and the fans installed at a suitable	
	height	
	Doors are provided with automatic door closer	
	• Doors, Windows and other openings are fitted with net or	
	screen to prevent insects etc.	
	Antiseptic/ disinfectant foot bath is provided at the	
	entrance	
	Sufficient number of latrine and urinals for worker are	
	provided and located outside the processing hall	
	 All the machinery is installed in such a manner which may allow continuous flow of production and do not accurate 	
	allow continuous flow of production and do not occupy more than 50% of the total production and permits	
	hygienic production and easy movement	
2	EQUIPMENT AND FIXTURES	
	Equipments kept clean, washed, dried and free from	
	moulds and fungi	
	• No such Container/ Vessel/ Equipment's in use likely to	
	cause metallic contamination	
	• The table tops used for food preparation are made of close	
	joint and impervious material.	
	• The equipment's are made of stainless steel /galvanised	
	iron/ non corrosive materials	
	 Appropriate facilities for the cleaning and disinfecting of aquiament's and instruments and preferable cleaning in 	
	equipment's and instruments and preferably cleaning in place (CIP) system are adopted; wherever necessary	
3	STORAGE SYSTEMS	
-	Appropriate arrangement for storage of food & food	
	ingredients provided and adequately segregated and	
	labelled	
	Raw material, food additives and ingredients, wherever	
	applicable are conforming to regulations laid down under	
	the act	

Sr. No.	Focus area	Observation and remarks
	Containers used for storage are made of non-toxic material	
	• Systems to adequately maintain time- temperature control at the time of storage	
	Cold Storage facility, wherever necessary/ provided	
4	PERSONAL HYGIENE	
	 Suitable aprons, head cover, disposable gloves & footwear are provided Adequate facilities for toilets, hand wash and footbath, with provision for detergent/bactericidal soap, hand drying facility and nail cutter are provided 	
	 No person suffering from any infection or contagious disease Arrangements are made to get the staff medically examined once in six months to ensure that they are free from infectious, contagious and other diseases The staff working in such factory are inoculated against the enteric group of disease and vaccinated No employee of such factory who is suffering from a hand or face injury, skin infection or clinically recognisable infectious disease 	
5	WATER SUPPLY	
	 Adequate supply of potable water Appropriate facilities for safe & clean storage of water 	
	 The water is examined chemically and bacteriologic ally by a NABL accredited laboratory Ice and steam wherever in use during processing is made from potable water Identifying marks have been applied to the pipelines for easy identification of potable and non-potable water 	
6	PEST CONTROL SYSTEM	
	 Treatment with permissible chemical, physical or biological agents within the permissible limits are carried out Adequate control measures are in place to prevent insect and rodents from the processing area 	
7	CONVEYANCE AND TRANSPORTATION	
	 Conveyance and transportation of food being done in an appropriate state of cleanliness, particularly if the same vehicle has been used to carry non-food items The conveyance and transportation are provided with temperature control system 	
8	CLEANING AND MAINTENANCE	
	Cleaning and sanitation programme is drawn up, observed and the record of the same is properly maintained Food preparation areas are cleaned at regular intervals, with water, and detergent and with the use of a disinfectant	

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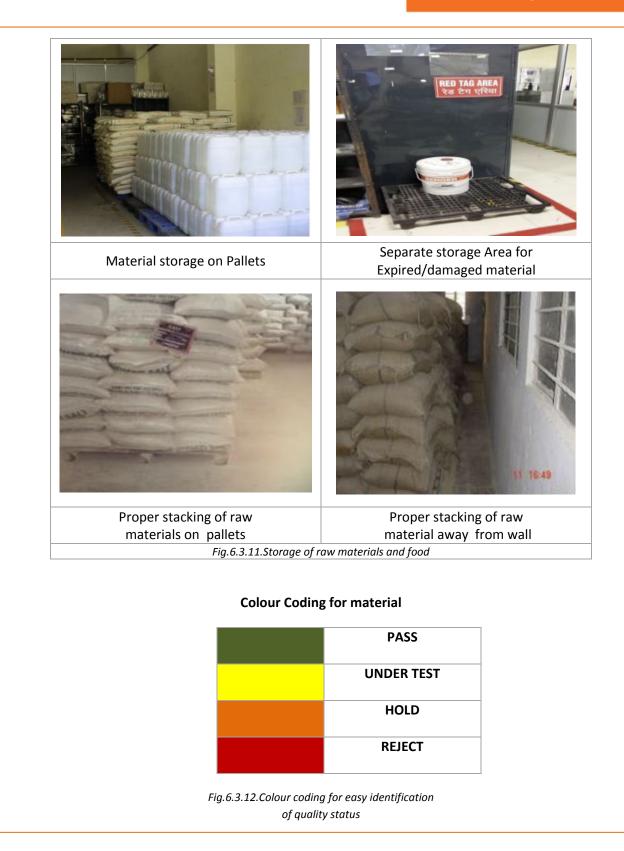
Sr. No.	Focus area	Observation and remarks
9	OPERATIONAL FEATURES	
	 The source and standards of raw material used are of optimum quality and as per regulation and standards laid down under the Act Test report from own or NABL accredited/ FSSAI notified labs regarding microbiological contaminants in food items are available Arrangements for monitoring temperature and relative 	
	humidity	
10	DOCUMENTATION AND RECORDS	
	 Records of daily production, raw material utilized and sales are available A periodic audit of the whole system according to the Standard Operating Procedure (SOP) conducted regarding Good Manufacturing Practices/Good Hygienic Practices (GMP/ GHP) system Appropriate records of food processing/ preparation, food quality, laboratory test results, pest control etc. for a period of 1 year or the shelf -life of the product; whichever is more Records of sale and purchase that the food product sold to registered/licensed vendor and raw material purchased from registered/ licensed supplier Recall plan 	
11	PRODUCT INFORMATION AND CONSUMER AWARENESS	
	All packaged food products carrying label and requisite information as per Regulations are made	
12	TRAINING	
	Food production personnel and production floor managers/ supervisors underwent appropriate food hygiene training	



Fig.6.3.4. Waste water disposal system/effluent treatment plants







Practical Guide



Fig.6.3.13.Clearly defined walkway water stagnation near the surroundings



Fig.6.3.14.Avoid vegetation growth near the premises



Fig.6.3.15.Avoid water stagnation near the surroundings



Fig.6.3.16.Walls: clean, durable, impervious to moisture



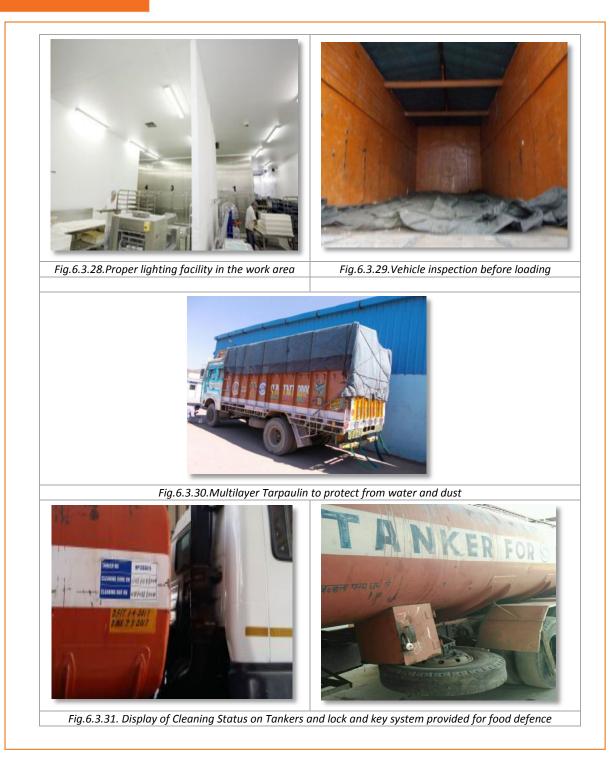
Fig.6.3.17.Avoid Cracks on walls as it allow bacteria and moulds to accumulate

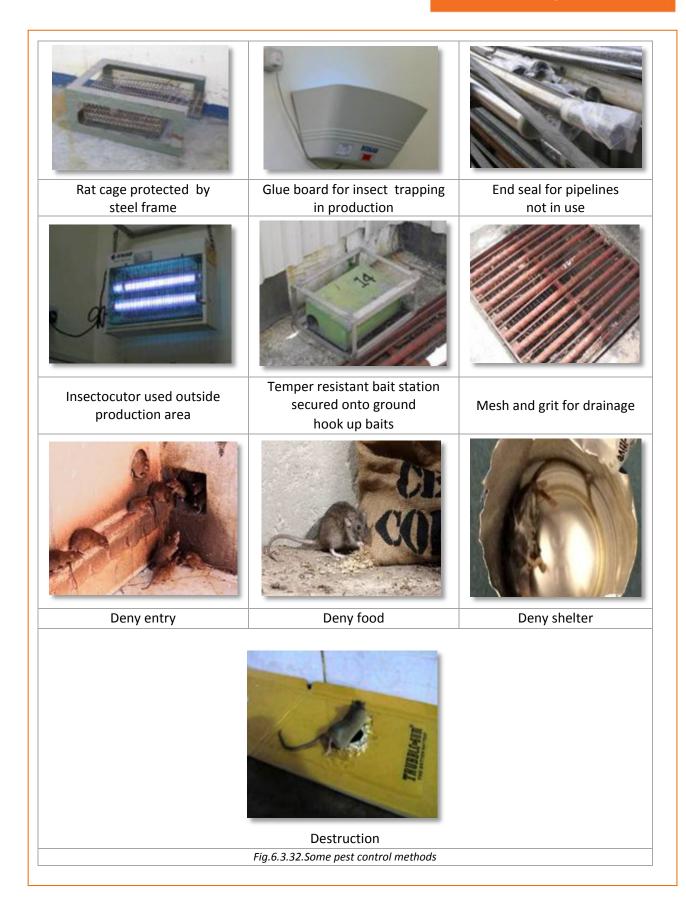


Pickle Making Technician



Fig.6.3.27.Food Transportation





HOT WATER SYSTE

HOT WATER SYSTEM /HW

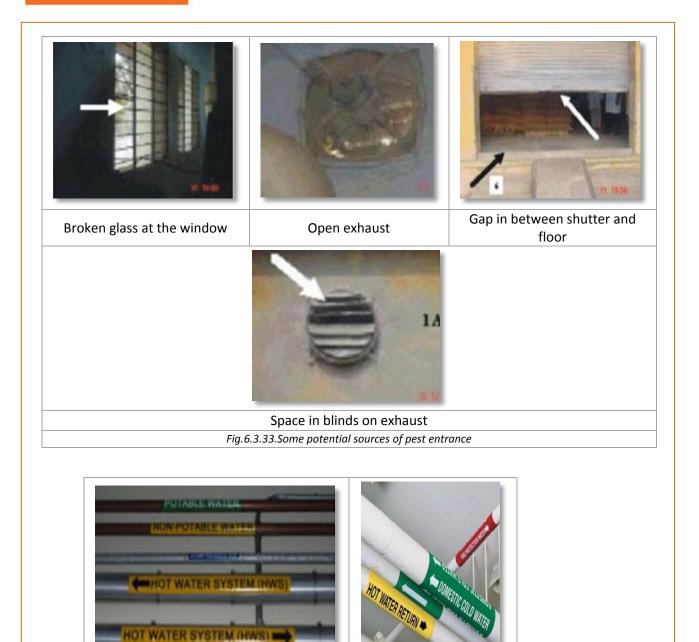


Fig.6.3.34. Color coding of water pipes to avoid contamination



Fig. 6.3.35. Waste categorisation with dedicated bins

Precautions:

• Ensure that critical control points are maintained as per HACCP principle.

Observation:

Raw material	CCP limit to be maintained as per specifications	CCP limit maintained (Y/N)
	Raw material	Raw material CCP limit to be maintained as per specifications

Conclusion:

Sr no	Are records relating to safety maintained in the Log Book (Y/N)?
1	

	Record	Supplier Guarantee		Store temperature log
	Responsibility	Reject material if not accompanied by supplier		
	Corrective action	Reject material if not accompanied by supplier		
FSMS Plan	Monitoring method	Supplier guarantee certificate is visually confirmed		Monitor temperature and humidity of storage
	Critical limit	As per company internal specifications		
	Control measure	Supplier guarantee specifications established by quality assurance department	Relative humidity- maintained store	FIFO system should be established
	Hazard	Physical hazard (dirt, stone, particles)	Chemicals (toxins, pesticides from raw material)	Relative humidity- maintained store

Pickle Making Technician

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Transforming the skill landscape

FICSI Food Industry Capacity and Skill Initiative

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7. Professional and Core Skills

Unit 7.1 – SWOT Analysis	30 mins
Unit 7.2 – Decision Making	1 hr 30 mins
Unit 7.3 – Plan and Organise	2 hrs
Unit 7.4 – Customer Centricity	1 hr
Unit 7.5 – Problem Solving	2 hrs
Unit 7.6 – Analytical Thinking	1 hr
Unit 7.7 – Critical Thinking	2 hrs

Key Learning Outcomes

At the end of this unit, you will be able to:

- 1. Undertake a self-assessment test
- 2. Identify personal strengths and weaknesses
- 3. Choose between two or more courses of action to solve problemsquickly and effectively
- 4. Plan and schedule activities or task assigned in an organised way
- 5. Manage time effectively to complete the tasks assigned
- 6. Identify customer requirements and their priority and respond accordingly
- 7. Identify potential problems to make sound and timely decisions
- 8. Apply analytical skills and its attributes to make decisions and solve problems
- 9. Develop critical thinking skills to prevent potential problems
- 10. Develop critical thinking skills to resolve issues

UNIT 7.1: SWOT Analysis

Unit Objectives

At the end of this unit, you will be able to:

- 1. Undertake a self-assessment test
- 2. Identify personal strengths and weaknesses

7.1.1 SWOT analysis

Write your strengths, weaknesses, opportunities, and threats in the 4 sections here.

Strengths	Weaknesses
Opportunities	Threats

Fig.7.1.1. SWOT Analysis

- 1. Was this activity helpful in doing a self-assessment?
- 2. What were some of the most interesting things you discovered about yourself during the activity?

UNIT 7.2: Decision Making

Unit Objectives

At the end of this unit, you will be able to:

1. Choose between two or more courses of action to solve problems quickly and effectively

7.2.1 What is decision making?

Decision making is an act of choosing between two or more courses of action. There may not always be a 'correct' decision among the available choices. There may have been a better choice that had not been considered, or the right information may not have been available at the time.

7.2.2 Techniques of decision making

Decision making is an act of choosing between two or more courses of action. There may not always be a 'correct' decision among the available choices. There may have been a better choice that had not been considered, or the right information may not have been available at the time. Many different techniques of decision making have been developed. The method used depends on the nature of the decision to be made and how complex it is. The stages of the method are as follows:

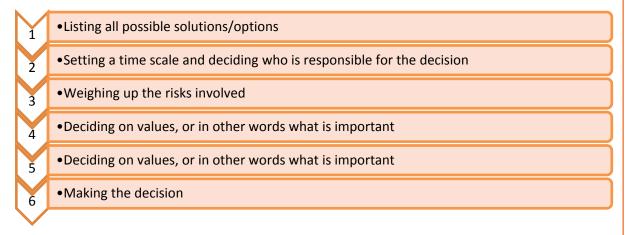


Fig.7.2.1 Steps for decision making

7.2.3 Develop Decision Making Skills

- Please answer each of the following questions as honestly as possible.
- Circle your answer for each question.
- Refer to the result table given below and evaluate the result of your answers.

		Mark where you stand (Circle your answer)				
Sr. No.	Decision making skills	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
1	Desire to actively participate in the process of solving/ improving a situation	5	4	3	2	1

			1			
2	Too much analysis of situation results in delaying decision	5	4	3	2	1
3	Respect other people's suggestion and recommendations	5	4	3	2	1
4	Analyse and calculate the risk and problems which may occur after taking a decision	5	4	3	2	1
5	Follow workplace rules and guidelines in situations involving high level of risk at work	5	4	3	2	1
6	Use your job specification to take appropriate decision	5	4	3	2	1
7	Do not hesitate to consult your supervisors and subordinates before arriving to a decision point	5	4	3	2	1
8	Do not make workplace decision based on emotions	5	4	3	2	1

• Evaluate your answers after you complete the above table.

• Check the result for each question if your answer is:

Score	Evaluation	Result
1 - 3	You need to work hard to develop this quality	Work hard
4	You possess this quality but need to enhance it for better success	Keep improving
5	You possess this quality and this is your strength use it to make timely and effective decision	Use this strength

My Score

What should you do?

UNIT 7.3: Plan and Organise

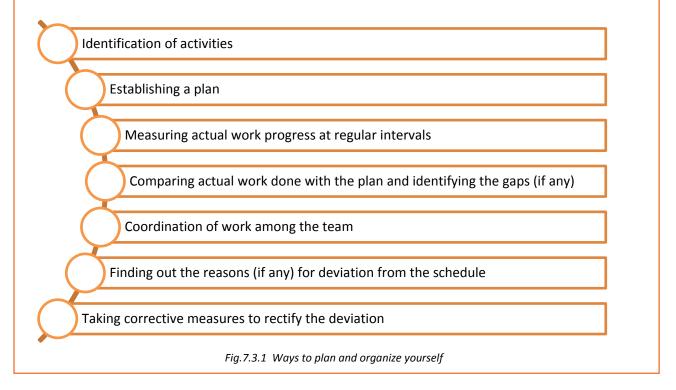
Unit Objectives 6

At the end of this unit, you will be able to:

- 1. Plan and schedule activities or task assigned in an organised way
- 2. Manage time effectively to complete the tasks assigned

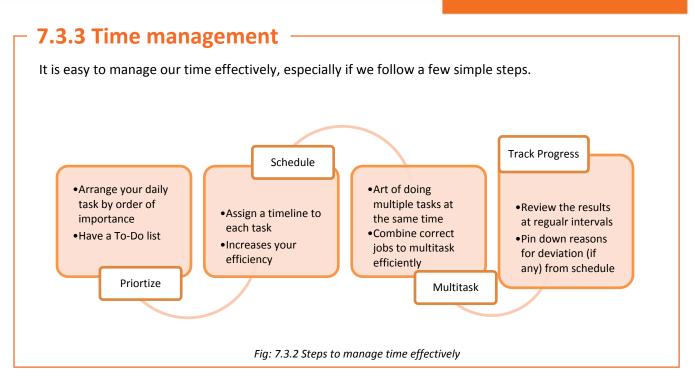
7.3.1 Ways to plan and organise yourself at workplace

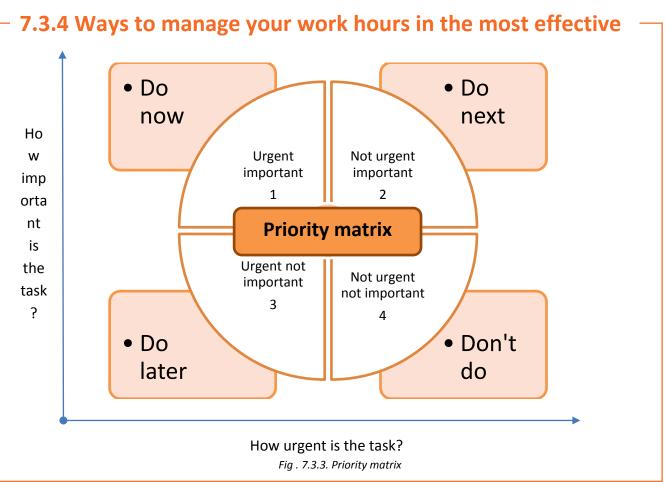
- Organising and planning is a process of completing a given task efficiently and successfully.
- Organising and planning includes:



7.3.2 Benefits of organising and planning 1. Write the benefits of organizing.

2. Write the benefits of planning.



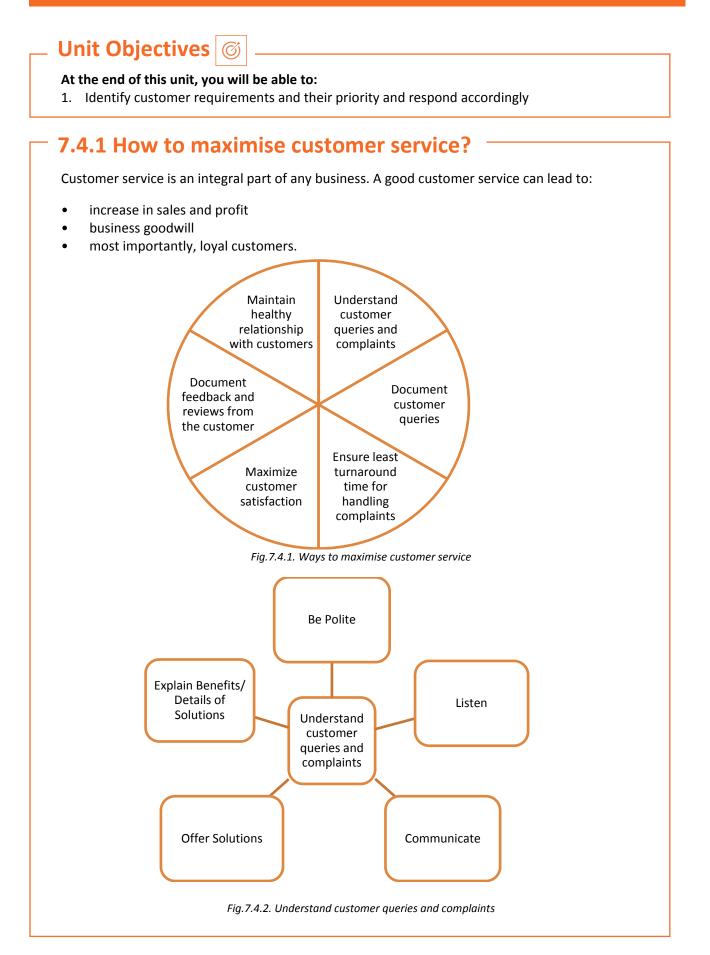


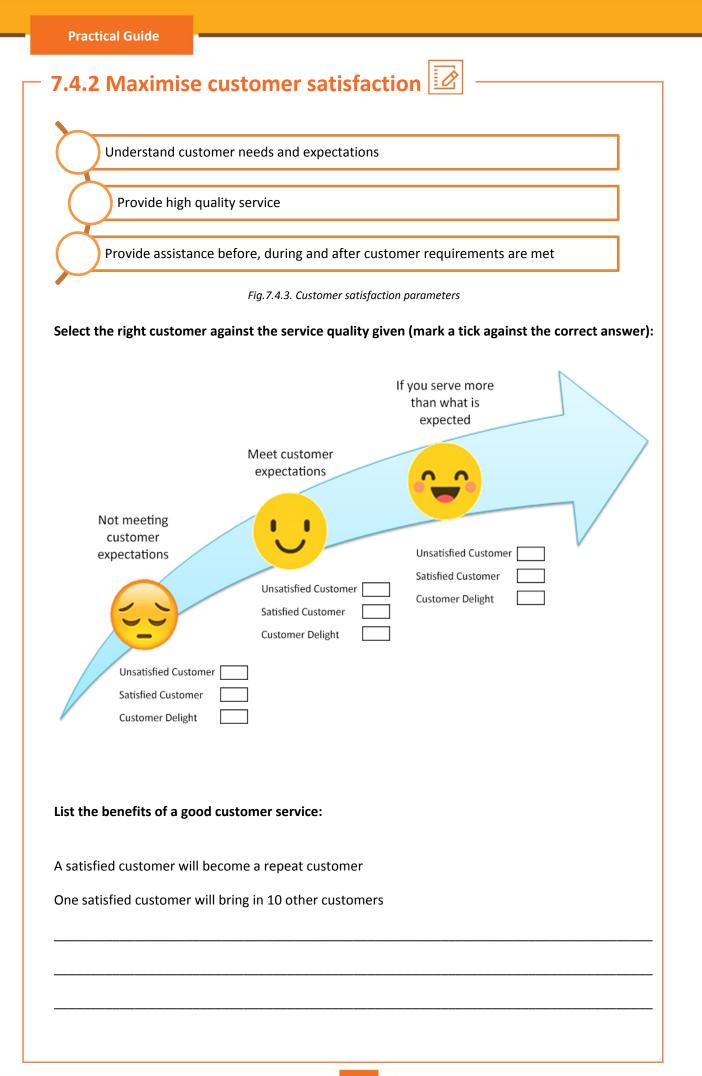
- 7.3.5 To-Do list

Create a To-Do list to keep track of the job received identifying the priority

Sr no	Date	Job code/ number	Task/ activities	Target completion	Priority
1					
2					
3					
4					
5					
6					

UNIT 7.4: Customer Centricity





UNIT 7.5:Problem Solving

Unit Objectives 6

At the end of this unit, you will be able to:

1. Identify potential problems to make sound and timely decisions

7.5.1 What is a problem?

A problem is a situation faced by an individual or a group that requires resolution. The apparent path for the solution may or may not be visible to people initially. Problem is what is different between 'what is' and 'what can' or 'should be'. It is usually an unwelcome and difficult situation that everybody faces in their lives.

Whether it is the personal life or a professional one, problems are a part of everybody's life because life is unpredictable. Surrendering to the problem and resigning to it is not always a good solution. A person needs tactics to solve it, learn from it and prevent it in the future.

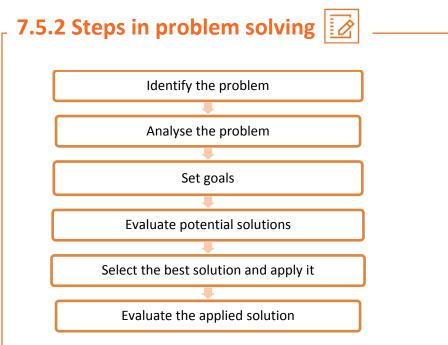


Fig .7.5.1.Steps in problem solving

Write your problem statement here (for eg: The output or product is not as per the desired quality and specifications) and use the template given to solve the problem.

Sr	Steps to solve the problems	Notes for problem solving
no	Identify the problem	
1	Identify what is wrong	
	Speak about it to your peers	
	Analyse the problem	
	What is the issue?	
2	Why did it happen?	
	When did it get noticed?	
	Who is going to get affected by it	
	Set goals	
	What do I want?	
	What is the current state and what is the desired state?	
3	What are the steps that I should take to resolve the issue?	
	Am I following the steps and finishing on time?	
	What is getting in my way of reaching the desired	
	outcome?	
	Evaluate potential solutions	
	What are the different options that will solve the	
4	problem?	
	What are the positives and negatives of each option?	
	Select the best solution and apply it	
5	Which one do you think is the best solution?	
	How will you apply the best solution?	
	Evaluate the applied solution	
	Was my solution the best one?	
c	Did I have a better way of solving the issue?	
6	Did I judge the problem correctly?	
	Could I stop the loss?	
	Can I apply this solution next time for a similar problem?	

UNIT 7.6: Analytical Thinking

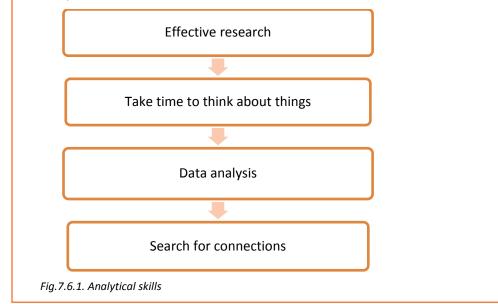
Unit Objectives 🞯

At the end of this unit, you will be able to:

1. Apply analytical skills and its attributes to make decisions and solve problems.

7.6.1 What are analytical skills?

Analytical skills refer to the ability to collect information, analyse information, make decisions, and solve problems.



7.6.2 How can you develop analytical skills?

- Use this template for developing your analytical skills.
- If you already possess analytical skills, you may continue enhancing them, and if you don't then work on developing it.

Sr.No.	How can I develop my analytical skills	I need to
1	Do effective research	
	Read books or newspapers, watch documentary movies,	
	attend lectures etc.	
2	Take time to think about things	·
	Think and reflect about things, instead of making quick	
	and rash decisions	
	Consider multiple sides of a problem before picking a	
	solution	
3	Do data analysis	
	After procuring information you should analyse it	
	Data analysis is simply the ability to find and detect	
	patterns in a volume of information	

4	Search for connections		
	Correlation about things in terms of cause and effect (for		
eg: The output or product is not as per the desired			
	quality and specifications)		
	Think about the similarities between things (for example,		
	bread making and biscuit making, wheat flour and		
	maida, paneer and cheese, pulp and juice, etc.)		

UNIT 7.7: Critical Thinking Skills

Unit Objectives 6 -

At the end of this unit, you will be able to:

- 1. Develop critical thinking skills to prevent potential problems
- 2. Develop critical thinking skills to resolve issues

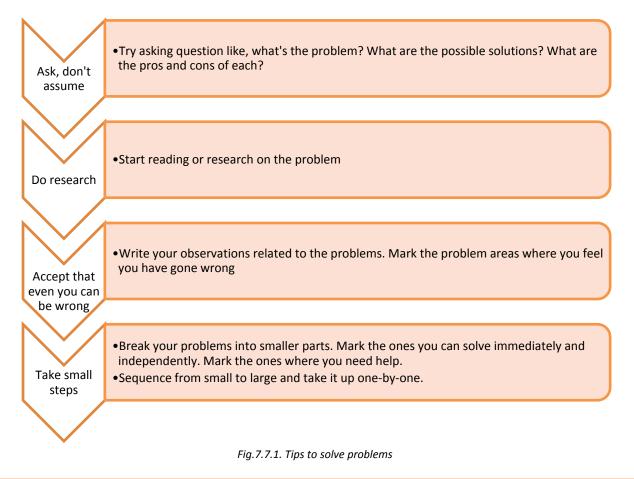
7.7.1 Critical thinking

- Critical thinking includes the ability to think clearly and rationally. It also involves the ability to engage in reflective and independent thinking.
- In critical thinking, there is no conclusion; it is constant interaction with changing circumstances and new knowledge.

7.7.2 How to develop critical thinking skills?

1. Write your problem statement here:

2. Use critical thinking skills to solve the problem. Here are some tips to do it.



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Pickle Making Technician

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Transforming the skill landscape



8. IT Orientation

Unit 8.1 - Basics of Information Technology

10 hrs



FIC/N0108

Key Learning Outcomes

At the end of this unit, you will be able to:

- 1. Identify the different parts of a computer
- 2. Use the keyboard and mouse effectively
- 3. Use the applications Word processor and Spreadsheet effectively

UNIT 8.1: Basics of Information Technology

Unit Objectives



At the end of this unit, you will be able to:

- 1. Identify the different parts of a computer
- 2. Use the keyboard and mouse effectively
- 3. Use the applications Word processor and Spreadsheet effectively

8.1.1 Computer Basics

Computing is an important part of everyday life in the twenty-first century. From music and photos to banking and communicating, computers have changed the way we work and live. This course introduces you to the fundamentals of computing, explains the components of a computer, explores operating system basics, and shows you how to use a mouse and a keyboard. Also explains how computers can be used in different aspects of life.

Benefits

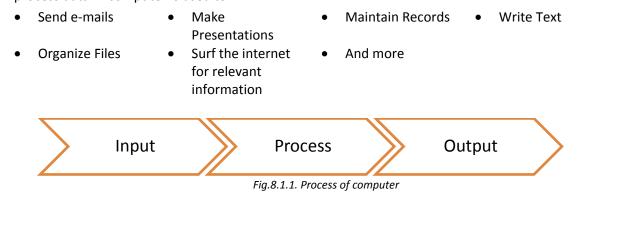
Computers are used in every field. They help organizations and individuals to conduct business transactions efficiently and quickly. Today, one of the basic skills necessary to succeed at a workplace is to know how to use the computer. To be able to get better jobs, you need to know how to use a computer.

8.1.2Introduction to Computers

What is a Computer?

Computer plays a very important role in our personal and professional lives. It has become an integral part of our lives.

Computers are electronic devices that perform the basic operations of input, processing storage, and output under the direction and control of a program. It has the ability to store, retrieve and process data. A computer is used to:



8.1.3 How does the Computer Work

The different parts of the computer need to talk to each other to do things for us. When you type letters on the keyboard, the keyboard sends a message through a wire to the System Unit which in turn sends a message to the monitor, they shows those letters on screen. So, only when all the parts are connected the computer can function properly.

Hardwareis nothing but the internal and external physical components of a computer system.

The external components are the:						
Monitor	Keyboard • Mouse	System Unit	Printer a	nd Speakers		
The internal compMotherboard	• Central Processing	g Unit (CPU)	• RAM	 Internal Buses, etc 		

These internal components present inside the System Unit make it possible for the computer to process commands received from the input devices and perform a particular task.

Software a collection of computer programs and related data that provide instructions telling a computer what to do. In contrast to hardware, software is intangible, meaning it "cannot be touched".

Few examples of Computer Software

Application Software	Word Processors or Video games
Programming Software/ Languages	Define the syntax and semantics of computer programs
System Software	Operating Systems that allow the user to interface with the computer

Important Characteristics of a Computer

Speed: Computers provide the processing speed required by all sectors of service. The quick service we expect at the bank, at the grocery store, on the stock exchange, and on the Internet are dependent on the speed of computers.

Reliability: Humans, not computers, cause most errors.

Storage: Computers are capable of storing enormous amounts of data that must be located and retrieved very quickly.

Capacity: The capability to store and retrieve volumes of data is crucial for the Information Age.

Productivity: Computers provide the processing speed.

Applications of Computer

Business: To track inventories with bar codes and scanners, check the credit status of customers, and transfer funds electronically.

Homes: The tiny computers embedded in the electronic circuitry of most appliances control the indoor temperature, operate home security systems, tell the time, and turn video cassette recorders on and off.

Automobiles: They regulate the flow of fuel, thereby increasing petrol mileage.

Entertainment: They are used to create digitised sound on stereo systems or computer – animated features from a digitally encoded laser disc.

Education: Computers are used to track grades and prepare notes; with computer – controlled projection units, they can add graphics, sound, and animation to enrich lectures.

Scientific Research: Computers are used to solve mathematical problems, display complicated data, or model systems that are too costly or impractical to build, such as testing the airflow around the next generation of space shuttles.

Defence/Military: Computers are used in sophisticated communications to encode and unscramble messages, and to keep track of personnel and supplies.

The Different Components;Peripherals and it's Uses of a Computer Input Devices: They are devices that convey information to the computer

Eg.:Keyboard; Scanner; Mouse; Mic or Microphone

Output Devices: Wherein the information is processed and displayed **Eg.:**Printer; Monitor; Speaker etc.



Fig.8.1.2.Components of a Computer

8.1.4Mouse

Mouse is used to point and select. Always place the mouse on a mouse pad.

The different types of mouse available are:



Mouse is used to point and	Click	Use	How to Use
select.	(Left) Click	Select	Press and release the button without moving the mouse.
	Click and Drag	Move	Press and do not release the left mouse button, and then move the mouse with the button still held down, and finally release the button.
	(Left) Double-click	Open	Press and release the left mouse button twice in rapid succession without moving the mouse.
Fig.8.1.7. Mouse	Right-click	Display usable dropdown menu	Press and release the right mouse button, without moving the mouse.

8.1.5Keyboard

The Keyboard is made up of Number and Letter keys. Keyboard is used for typing and the monitor shows what is typed. But first the keyboard tells the System Unit what to do and the System Unit gives this message to the monitor.

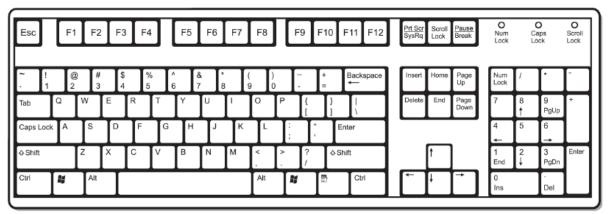
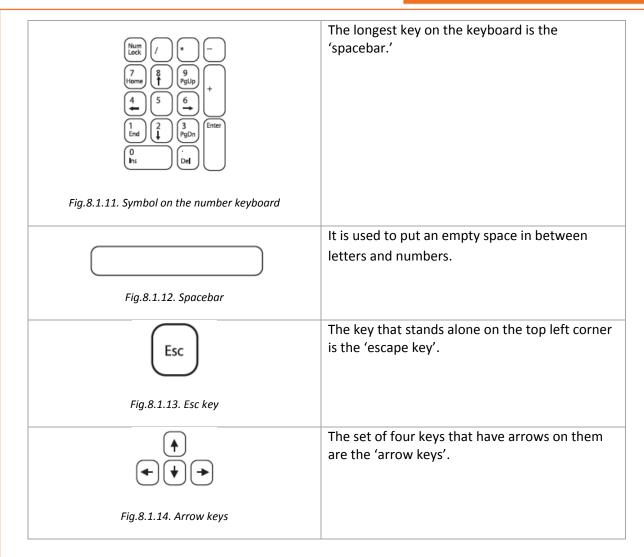
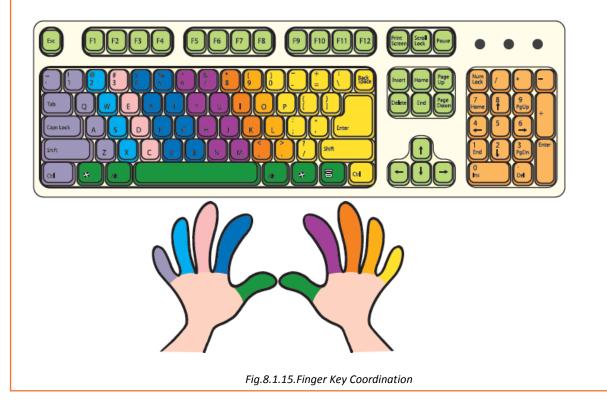


Fig.8.1.8. Keyboard

Different Set of Keys	Description
QWERTYUIOP ASDFGHJKL ZXCVBNM	The keyboard has 26 letter keys from A to Z called the alphabet keys.
Fig.8.1.9.Alphabet Keys	
$ \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix} \begin{pmatrix} \# \\ 3 \end{bmatrix} \begin{pmatrix} \$ \\ 4 \end{bmatrix} \begin{pmatrix} \$ \\ 5 \end{bmatrix} \begin{pmatrix} \land \\ 6 \\ 7 \end{bmatrix} \begin{pmatrix} \ast \\ 8 \\ 9 \end{bmatrix} \begin{pmatrix} 1 \\ 9 \\ 0 \end{bmatrix} $	The number keys (0 to 9) are called 'numeric keys'.
Fig.8.1.10. Numeric Keys	



Finger Key Coordination



Practical Guide

- 8.1.6Computer Peripherals

	It is a device that prints text or illustrations on paper. There aredifferent types of printers like dot-matrix, ink-Jet, laser etc.
	All the parts are connected to system unit with cables or wires. Thesystem unit in turn is connected to the main power supply.
Fig.8.1.16. Printer	Considered and devices used to lister to reveal values and other
Fig.8.1.17. Speakers	Speakers are devices used to listen to music, voices and other sounds.
Fig.8.1.18. Microphone	The microphone converts sound inputs by the user into a format understood by the computer. It is used for sound recording.
Fig.8.1.19. Web camera	These are small cameras (usually, though not always, video cameras), whose images can be accessed using the World Wide Web, instant messaging like hotmail, Google talk, or a PC video conferencing application.
Fig.8.1.20. Scanner	The scanner converts print data into electronic data. Images and text available in books, newspapers and magazines can be scanned and used as computer data. The scanner is similar to a photocopier machine, except here the copy comes in electronicformat.

	Stationary (fixed) storage devices are fixed on the hard disk drive inside the system unit. They can store large amounts of data (eg. 40 to 300 GB data), and can be used only in a particular machine.
Fig.8.1.21. Hard Disk	
Fig.8.1.22. CD-ROM	Compact Disk- Read Only Memory is a mobile storage device. It can store around 800 MB of data. Data copied to a CD-ROM cannot be edited directly.
Contraction of the second	They are mobile storage devices. They can store from 540 MB to 16 GB of data and the data can be edited directly.
Fig.8.1.23. Flash Drives	

8.1.7 Using a Computer

How to Start your Computer

- First, plug in the computer and switch it on.
- Turn on the UPS.
- Turn on the system unit by pressing the power button.
- This may cause a small light to turn on and then the monitor to turn on. Let the computer start. The computer will check all of its components and if everything is running smoothly, it will display the welcome screen, and then to the user screen.
- Type in the password if you have set one.
- Once the booting process is over the following window is displayed.

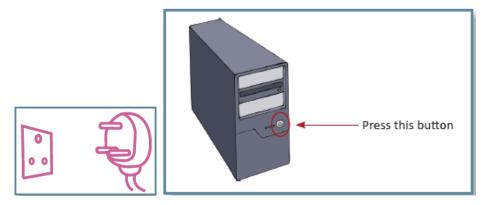


Fig.8.1.24. Plug in the computer to switch it on

Practical Guide



Fig.8.1.25. Displayed Window

How to Shut down your Computer

- Never just switch off your computer you may lose unsaved information and damage your computer's hard disk drive or may lose the saved information too!
- To shut down your computer properly, close all open applications.
- Click on the Start button.
- Select the 'Turn off' option by clicking on it.
- Click on the 'Yes' button to confirm selection.





Fig.8.1.26. Start bar

Microsoft Access 2010

Microsoft Excel 2010

.

Microsoft InfoPath Designer 2010

Microsoft InfoPath Filler 2010

8.1.8 Word Processor (MS Word 2010)

Introduction to MS Word

Microsoft Word 2010 is a word-processing program, designed to help you create professionalquality documents. With the finest document-formatting tools, Word helps you organize and write your documents more efficiently. Word also includes powerful editing and revising tools so that you can collaborate with others easily.

Windows Update

Microsoft Update

Getting Started

Now that you have an understanding of where things are located, let's look at the steps needed to create a document.

Opening Outlook

You may have a shortcut to Word on your desktop, if so double click the icon and Word will open. If not follow the steps below:

- 1. Click on the Start button
- 2. Highlight Programs
- 3. Highlight Microsoft Office
- 4. Click on Microsoft Word 2010

Create a New Document

- 1. Click the File tab and then click New.
- 2. Under Available Templates, click Blank Document.
- 3. Click Create.

8.1.9 Spreadsheet (MS Excel 2010)

Introduction to MS Excel

This is to introduce you to using Microsoft Excel if you're unfamiliar with any major aspect of it. The topics will lead you through the fundamentals of creating and working with Excel spreadsheets. Today's Excel spreadsheet isn't just for financial professionals. Microsoft Excel offers intuitive tools that make it easy to access, connect, and analyze critical data—regardless of your profession. The first step in learning to use your new software is to start (or in computer parlance: launch) the Excel Program.

Launch Excel:

- 1. SELECT (Click) the Windows Start button; this will bring up a set of choices in a menu.
- 2. Select Programs. Another menu will appear to the right.
- 3. Locate and Select Microsoft Office and another menu will appear on the right.
- 4. Locate and Select Microsoft Office Excel 2010. You have now launched Excel.

When Excel starts, it creates a new blank workbook, called **Book 1**. The **Workbook** is similar to a notebook. Inside you have sheets, each of which is called a **worksheet**. Each worksheet has a name that appears on a **sheet tab** at the bottom of the workbook.



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Startup

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Fig.8.1.28. Start \rightarrow Programs \rightarrow Microsoft Office \rightarrow Microsoft Word 2010

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