

सत्यमेव जयते GOVERNMENT OF INDIA MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP



Transforming the skill landscape



Food Industry Capacity and Skill Initiative

Sector Food Processing

Sub-Sector Food Grain Milling

Occupation Processing

Reference ID: FIC/Q1003, NSQF Level 4

Grain Mill Operator

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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 'Grain Mill Operator' 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 a Grain Mill Operator.

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 operation a grain mill
- Prepare for production of products from various grains
- Operate grain mill
- Document and maintain records related to operating a grain mill
- Follow food safety, hygiene and sanitation for processing food products



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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



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

1.1.1 Materials required for the practical

- Protective gloves
- Head caps
- Aprons
- Safety goggles
- Safety boots
- Mouth masks
- Sanitiser
- Safety manual

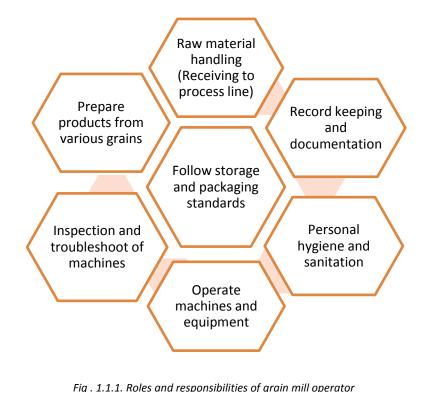
1.1.2 Practical

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.

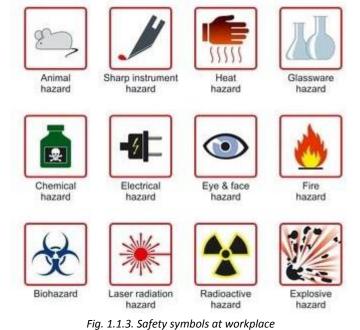


2. When at workplace you must wear the personal protective equipment following the way it is depicted in the picture given below.



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 grain mill operator	Has the function being carried out as per specifications?
1		
2		
3		
4		
5		
6		

Conclusion:

Based on the observations, write your conclusions here:

Sr no	
1	
2	
3	
4	
5	
6	

	Practical Gui
-	Notes

Grain Mill Operator





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2. Prepare and Maintain Work Area and Process Machineries for Operating a Grain

Unit 2.1 - Prepare and Maintain Work Area7 hrsUnit 2.2 - Prepare and Maintain Process Machineries8 hrs



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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, ozone etc.)
- 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.

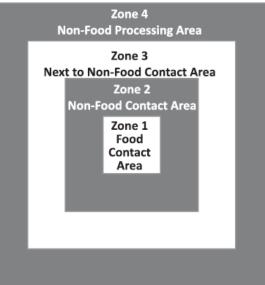


Fig. 2.1.1. Area Layout

- 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



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
- Closed circuit aspirator
- Gravity selector and de-stoner
- Color sorter
- Paddy husker
- Whitener
- Polisher
- Rotart sifter
- Thickness/ width seperator
- Length grader
- Polisher
- SOP
- Safety manual

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

Pre-clean	 Scrape/ wipe/ sweep away food particles and other physical particles
Wash	 Use hot water and detergent to remove grease and dirt Soak if required
Rinse	Rinse off any loose dirt or detergent
Sanitise	Use disinfectant to remove any remaining bacteria
Final rinse	Wash off sanitiser
Dry	• Drip dry/ blow dry or any appropriate method

Fig. 2.2.1. Steps in cleaning procedure

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:

ir Io	Parts used for CIP	Parts used for COP	Parts used for SIP
_			
1			
;			

Notes 📋		





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3. Prepare for Production of Products from Various Grains

Unit 3.1 - Plan Equipment Utilisation for Preparation of	10 hrs
Products	
Unit 3.2 - Check Raw Materials and Equipment for	10 hrs
Production	101113



FIC/N1008

Key Learning Outcomes Ϋ

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

UNIT 3.1: Plan Equipment Utilisation for Preparation of

Products



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

3.1.1 Materials required for the practical

- Production process chart
- SOP
- Safety Manual

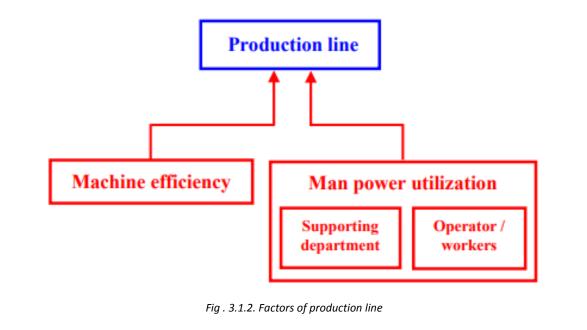


Pre-requisite knowledge:

• Production preparation.

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 utilisation.



- 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 Equipment Efficiency (OEE) =	ΑΧΡΧQ	

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. Record all the details in the observation sheet.
- 7. Check that whether preventive maintenance is in place or not.
- 8. 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	Production size (qty)	Types of products to be made	Machine or equipment to be used	No. of times the machine/equipment to be used	Duration of the process
1					
2					
3					
4					
5					
6					

Conclusion:

Write your conclusions in the given table.

Sr	Conclusion
no	
1	
2	
3	
4	
5	
6	

UNIT 3.2: Check Raw Materials and Equipment for

Production

Unit Objectives

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

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

- 3.2.1 Materials required for the practical

- Different types of grains
- Work flow diagram/chart
- SOP
- Food safety manual



Pre-requisite knowledge:

• Production preparation.

Method:

- 1 Calculate the number of times you will require to operate the machine for the given batch size and machine capacity.
- 2 Based on the batch size and the machine availability select the processing machines for optimum utilization.

Formula for calculation:

Consider the machine capacity is = x kg The batch size = y kg No. of times the machine needs to be operated for optimum utilization = z z=x/y

For eg: if x=200 kg, y=50 kg then: z=200/50 z = 4

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

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	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					
6					

Conclusion:

Batch size	Total production time	Is it as per schedule (Y/N)
	Batch size	Batch size Total production time

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 Notes 📋 -

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4. Operate a Grain Mill

Unit 4.1 - Operating Grain Mill	20 hrs
Unit 4.2 - Post Production Cleaning and Regular	20 hrs
Maintenance of Equipment	





Key Learning Outcomes 💱

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

- 1. Execute the process of cleaning and grading of grains for milling
- 2. Carry out the process of grain milling
- 3. Demonstrate the process of cleaning the work area and machineries after production

UNIT 4.1: Operating Grain Mill

Unit Objectives

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

- 1. Execute the process of cleaning and grading of grains for milling
- 2. Carry out the process of grain milling

4.1.1 Materials required for the practical

- Raw grains
- Milling seperator
- Closed circuit aspirator
- Gravity selector and de-stoner
- Color sorter
- Paddy husker
- Whitener
- Polisher
- Rotary sifter
- Grinder/Flour Mill
- Emery roller
- Thickness/ width separator
- Length grader
- Polisher

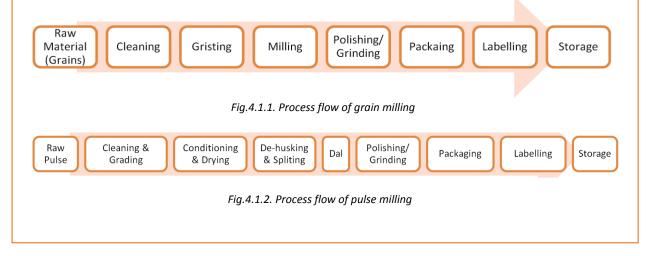
4.1.2 Practical 🖄

Pre-requisite knowledge:

Grain mill operation.

Method:

Refer the grain milling operation as given:

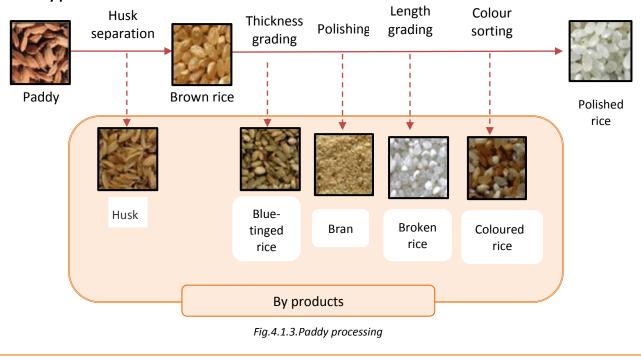


Flour preparation

1. Select raw materials which meet quality parameters.

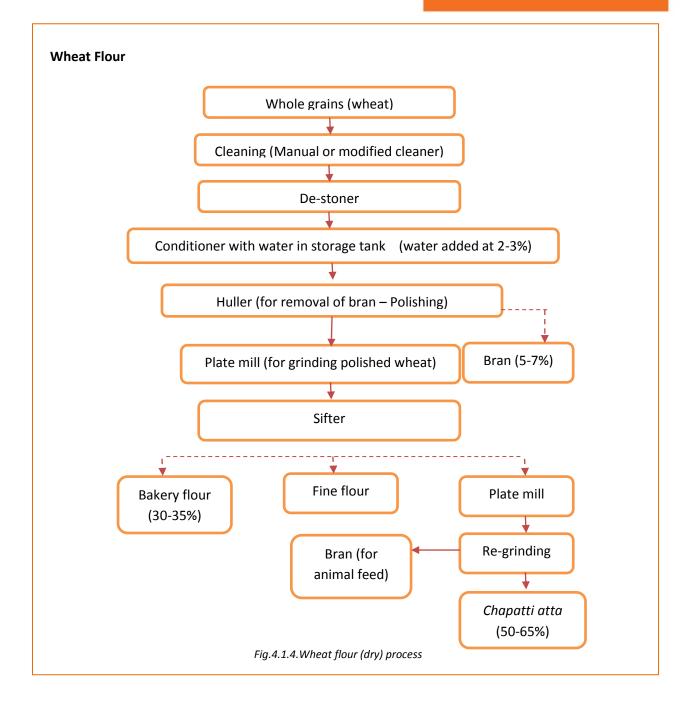
Quality parameters	Range (%)
Immature and shriveled grain % by mass (Not more than)	8.0
Other edible grains percent by mass, (Not more than)	2.0
Ash (percent on dry matter basis)	0.8 to 1.0
Protein percent by mass on a dry basis, (Not less than)	8.0

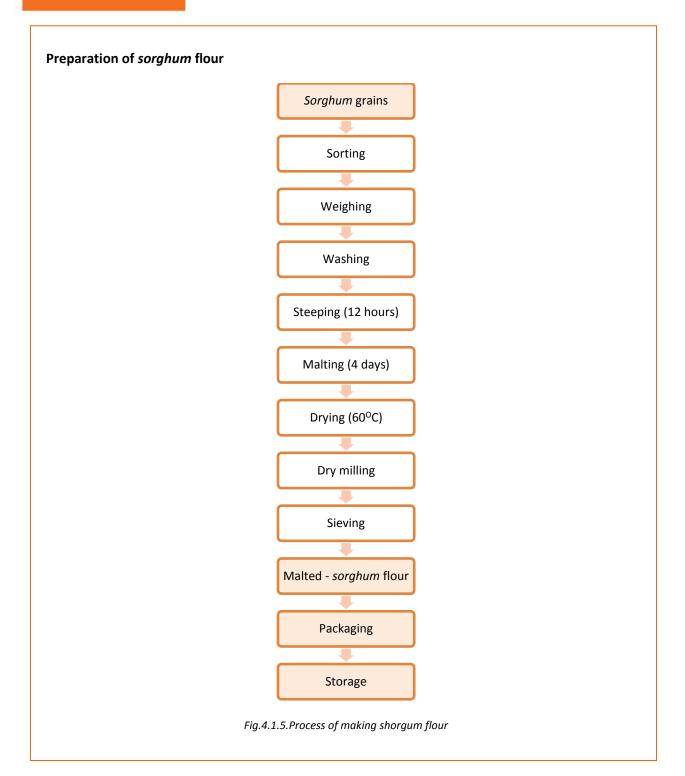
- 2. Prioritise the lot which has to be delivered urgently as per the SOP and stock rotation system (FIFO and FEFO) as applicable.
- 3. Weigh the raw materials taken for flour preparation.
- 4. Wash the grains to clean it completely.
- 5. Use magnet to remove any metal elements from the selected raw materials.
- 6. After washing the grains dry the grains use a mechanical drier or dry by natural sun drying process.
- 7. Do gristing (mixing of the grains as per the desired final products as per the SOP like multi grains flour).
- 8. Transfer the grist to emery roller rotating at different speeds.
- 9. Set the speed rolls so that the milling process retains the outer skins of the grains.
- 10. Remove the flour when the desired consistency is achieved.
- 11. Identify the packaging materials required as per the SOP. Once the product is ready, send it for packaging and storage.
- 12. Pack the flour in the specified packaging.
- 13. Label the packing and send for storage.



Paddy processing

Grain Mill Operator





Grain Mill Operator

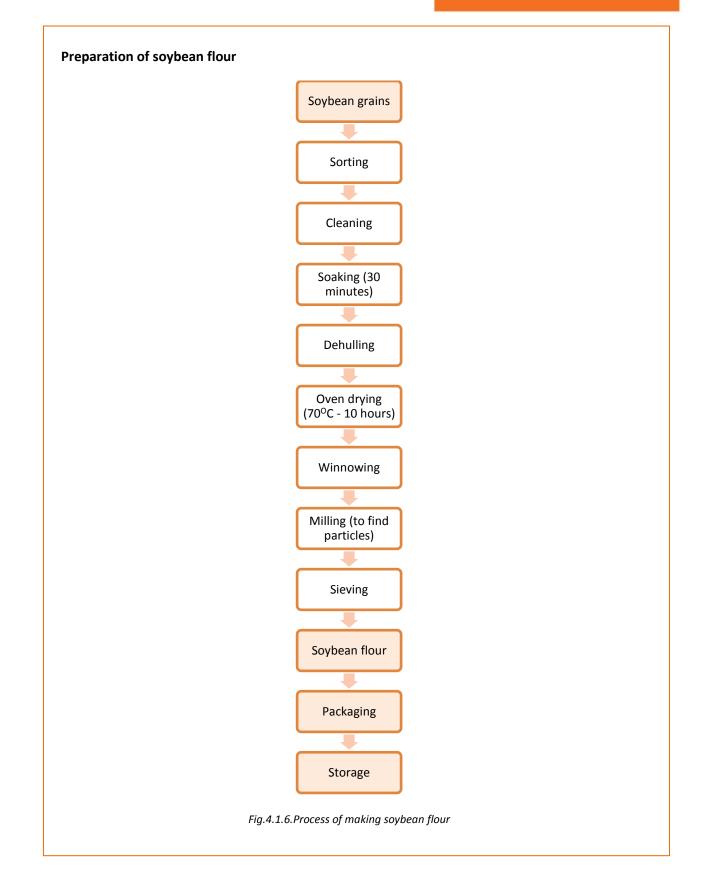




Fig.4.1.7. Colour sorter Colour sorter is used for optical sorting of food grains



Fig.4.1.8.Paddy husker The husker removes husk from the paddy, it includes vibratory feeder, timing belt drive, new aspiration system, and a built-in access platform for roll changing



Fig.4.1.9.Whitener The machine provides a high quality, clean finish to the rice



Fig.4.1.10.Thickness/width separator This machine is widely used at various largescale rice mills, seed processing plants, and grains/beans processing plants to produce high quality products because it can separate broken grains and immature grain easily and efficiently • Send the processed grains/ flour for packgaing as per the SOP (refer to the table - Types of packaging)

раскадія			—	-
Types of	Primary	Secondary	Tertiary	Transit
Packaging Meaning Packaging	 Packaging Comes in direct contact with the food and holds the product and features labeling Bulk packing of cereals 	 Packaging Creates ease of manual movement of products Cardboard 	 Packaging Used for long distance transportation and distribution Large carton 	 Packaging Used to bundle the boxes or crates for ease of transportation and distribution overseas Palletised
Materials	 and pulses Jute Bags Woven sacks made out of High Density Polyethylene (HDPE)/Polypropylene (PP) Woven Sacks HDPE woven sacks laminated with LDPE Multiwall paper Sacks Consumer Packs for Whole Food Grains Packs made of printed LDPE/LLDPE film Packs made of Polypropylene (PP) or Biaxially Oriented Polypropylene (BOPP) film High Molecular High Density Polyethylene film packs Laminates made from BOPP/LDPE, Cast Polypropylene (CPP)/LDPE, Polyester/ LDPE are used in few branded commodities. Paper products (bags, cardboard boxes with inner lining etc.) 	 Cardboard box Lined Cardboard box Plastic bags Paper bags Small cartons boxes 	 Large gunny/plastic bags 	 Functional crates Large carton

Types of	Primary	Secondary	Tertiary	Transit
Packaging	Packaging	Packaging	Packaging	Packaging
Packaging	Milled Grain Products	Cardboard	Large carton	Palletised
Materials	(Bulk Packing)	box	boxes	crates
	Woven sacks made	Lined	Large	Large carton
	out HDPE/ PP either	Cardboard	gunny/plastic	
	laminated with	box	bags	
	LDPE/HMHDPE	 Plastic bags 	•	
		 Paper bags 		
	Consumer Packs for	 Faper bags Small 		
	Milled Products	cartons		
	 Polyethylene Film: Low Density Polyethylene (LDPE) is the most commonly used packaging material for milled products. Linear Low Density Polyethylene (LLDPE) is superior to LDPE High Molecular High Density Polyethylene (HMHDPE) 	boxes		
	Co-extruded Films: For Milled Wheat & Other Flour • Three layer co- extruded film having structure LDPE/HDPE/LLDPE with a laminate layer of Metallocene resins - overcomes the oozing issue of milled product.			
	 Processed Cereal and Pulse Products Packaging PVC/PVDC co-polymer coated with PP-LDPE - a good oxygen barrier. Polyester/foil/LDPE laminated linings inserted in duplex board carton. 			

Types of	Primary	Secondary	Tertiary	Transit
Packaging	Packaging	Packaging	Packaging	Packaging
Packaging Materials	 Weaning Food Packaging (Baby food) LDPE is used as the sealant layer (bag-in-box type packaging/lined cartons) The other films used for liner bags are BOPP/Poly or Polyester/Poly. 			
Products Packed	 Whole cereals and pulses (Rice, wheat, gram, lentils, tur dal etc.) Milled cereals and pulses (Flour, maida, semolina (rawa), besan etc.) Baby food (Nestum, Farex, Cerelac etc.) Processed Cereal (Breakfast cereals: Choco-chips, cornflakes etc.) Ready mixes (Cake mix, idli mix, vada mix etc.) 	All products	All products	All products



Precautions:

- Store the flour in the warehouse free from pests and other infestation.
- Ensure that the label printed for the packing has all the information like ingredients used and their nutritional value.
- Avoid direct moisture contact with the final product while processing and storage.
- 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	Raw materials taken	Quantity of raw materials	Labelling done (yes/no)	Stored at safe place (yes/no)
1				
2				
3				
4				
5				

Conclusion:

Write your conclusion here.

Sr	
no	
1	
2	
3	
4	
5	

UNIT 4.2: Post Production Cleaning and Regular Maintenance of Equipment

Unit Objectives 🧭

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

1. Demonstrate the process of cleaning the work area and machineries after production

4.2.1 Materials required for the practical

- Equipment and machines used in processing
- Cleaning agents (like detergents, hypochlorite, liquid chlorine, hydrogen peroxide, ozone etc.)
- Sanitisers
- Disinfectants
- Floor area layout
- Tool box

Fig. 4.2.1. Tool box It is a box to organize, carry, and keep the tools safe

4.2.2 Practical 🖄

Pre-requisite knowledge:

Grain mill operation.

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. Place the sanitiser and disinfectant in the designated store area after using it.
- 15. Prepare the list of machineries present in the processing unit.
- 16. Execute the cleaning of equipment and machineries as per the SOP.
- 17. Refer to the manufacturers' manual for recommended cleaning agents and sanitisers.
- 18. Execute CIP for the internal cleaning of the machines and equipment.
- 19. Carry out the COP for the parts like fittings, gaskets, valves, tank vents, grinders, pumps, knives and nozzles as per company SOP.
- 20. Carry out SIP process to sterilise, disinfect and sanitise the machineries.
- 21. If required apply high air pressure cleaning by removing the equipment parts and replacing them after cleaning.
- 22. Check for cleaning efficiency by swab test or rinse test.
- 23. Apply oil and grease to the required parts as part of routine maintenance.

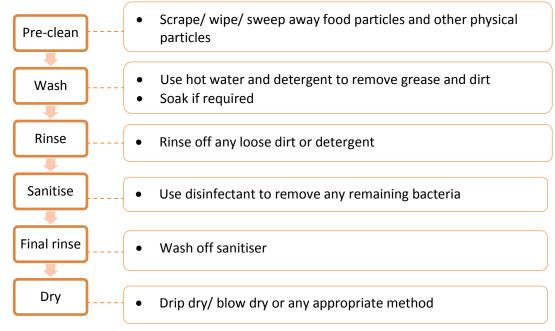


Fig. 4.2.2. Cleaning process

Precautions:

- Ensure machines are unplugged from the power source before cleaning.
- Make sure that after cleaning the machines and equipment are ready for use.
- Ensure that for preventive maintenance you have carried out these four activities one by one:
 - o Cleaning
 - \circ Inspection
 - o Oiling
 - o Retightening
- 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.



Notes 🚔

Grain Mill Operator





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5. Complete



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Documentation and Record Keeping Related to Operating a Grain Mill

Unit 5.1 - Raw Material Records	3 hrs
Unit 5.2 - Production Schedule and Process Parameters	3 hrs
Unit 5.3 - Finished Products Records	4 hrs



Food Industry Capacity and Skill Initiative

FIC/N 1010

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

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.



Fig. 5.1.1. 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 Ø

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				

Conclusion:

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

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

- 5. Check the packaging of the finished goods is as per the SOP.
- 6. Check the labels of the finished goods for all the required entries as per the SOP and FSSAI guidelines.
- 7. 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.
- 8. 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:

Sr no	Products
1	
2	
3	
4	
5	

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6. Food Safety, Hygiene and Sanitation for Processing Food

Unit 6.1 - Safety and Sanitation Functions	10 hrs
Unit 6.2 - Food Safety Hazards	10 hrs
Unit 6.3 - Apply Food Safety Practices	10 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

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 safety manual
- 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.

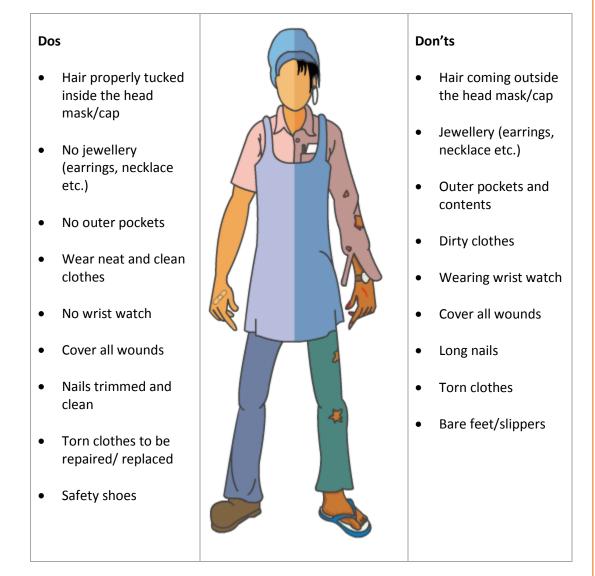


Fig. 6.1.1. Behavioural practices for food handlers – do's and don't's

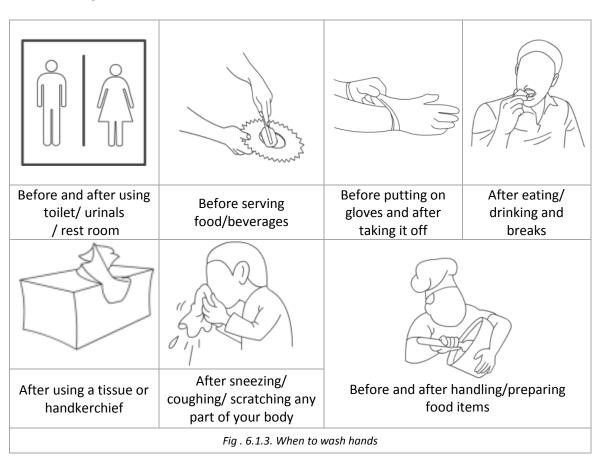
- 4. Always clean your hands before beginning work, before handling food and after any activity which may contaminate the food and equipment you are working with.
- 5. Follow the six simple steps as given for hand sanitation.



Fig. 6.1.2. Hand sanitation

Grain Mill Operator

6. Follow the guidelines when to wash hands.



Raw material procurement

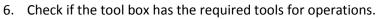
- 1. Check all raw materials for visible deterioration, off-odour and for any foreign matter while receiving and storing.
- 2. Raw materials received in tankers to be checked for seal integrity and only dedicated tankers to be used.
- 3. Check if the raw materials quantities purchased correspond to storage/preservation 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.



Fig. 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:

Materials	Availability and maintenance
List of PPE	
List of Cleaning agents	
List of warnings and symbols present	
at workplace	
	List of PPE List of Cleaning agents List of Cleaning agents List of warnings and symbols present

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

Conclusion:

Write your conclusions here.

Sr no	Why safety at workplace is very important?
1	Are the necessary PPEs available to carry out the work? (Y/N)
2	Are the cleaning agents (sanitisers, soaps, etc.) available at workplace? (Y/N)
3	Are the safety and warning symbols displayed at the workplace? (Y/N)
4	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 safety manual
- Food samples

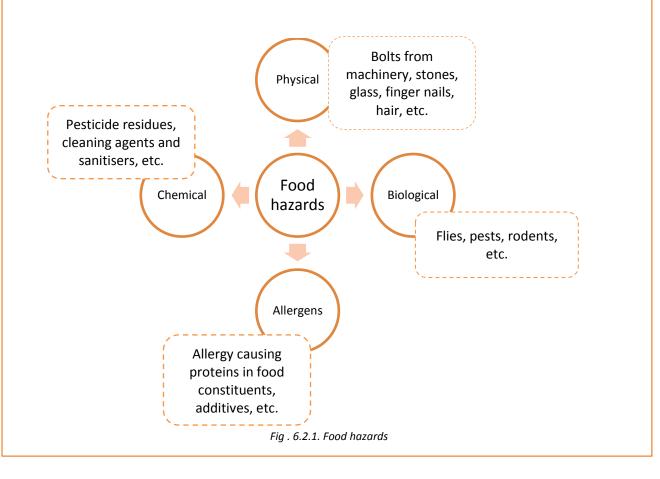
6.2.2 Practical 🖗

Pre-requisite knowledge:

• Food safety, hygiene and sanitation.

Method:

- 1. Identify the types of hazards in food.
- 2. Check for the possible hazard in the entire process of production of grain milling.



	MU CON		
Cerals containing	Eggs and	Fish and fish	Tree nuts and
gluten	egg products	products	nut products
		RECEIVENTIAL CONTINUES OF THE RESERVENCE OF THE REALTH PROBLEMS.	
Peanuts soyabeans	Crustacea and its	Sulphite in	
and its products	products	concentrations of	Milk products
	Fig. 6.2.2	10mg/kg or more Food allergens	
	1 ig : 0.2.2.		
	. 6.2.3. Biological contaminants sticide residues, detergent	s, etc.	
	6.2.4. Chemical contaminants		
Physical Bo	Its from machinery, stones	, glass, etc.	
Fig.	6.2.5. Physical contaminants		
	of incoming raw materials		
-	appropriate (follow SOP) t	_	-
 Handle the dama receipt. 	aged containers appropriat	ery as per SOP to minimise	e cross-contamination at

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	

6

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 safety manual
- 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.

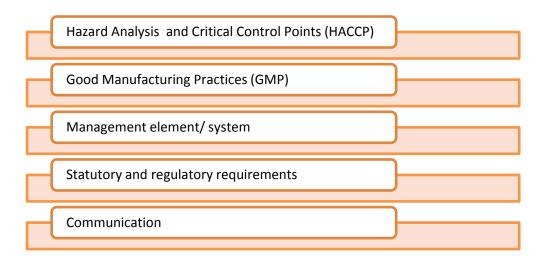
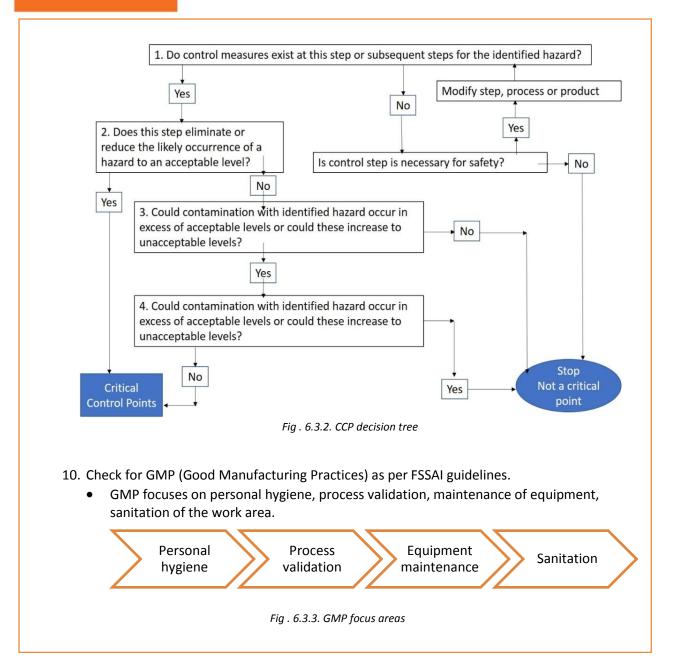


Fig. 6.3.1. Key elements of FSMS

- 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 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 ioint and importious material	
	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 	
	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	

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 	
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	

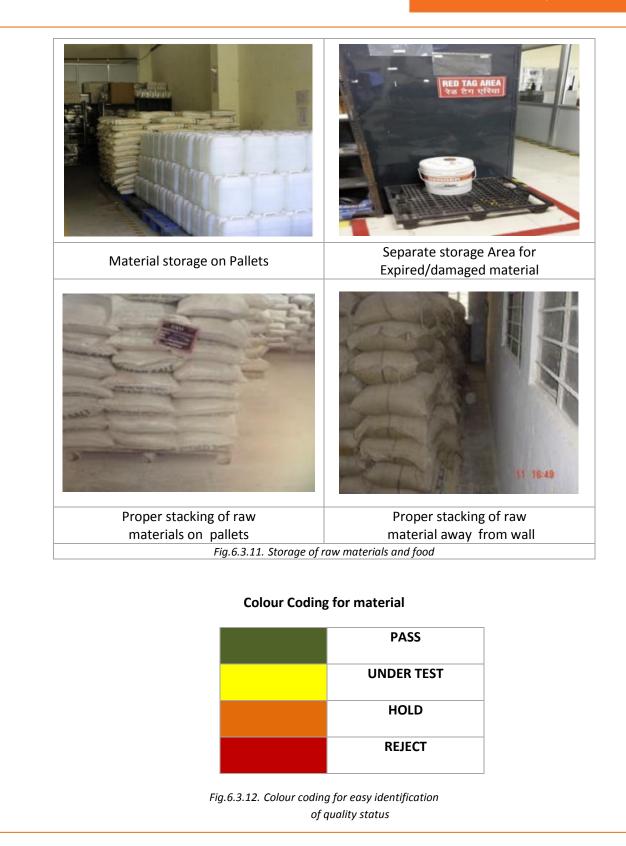


Fig.6.3.4. Waste water disposal system/effluent treatment plants



Fig.6.3.5. Well-guarded entranceFig.6.3.6. Demarcation of the areaImage: Signed state of the state of the





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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



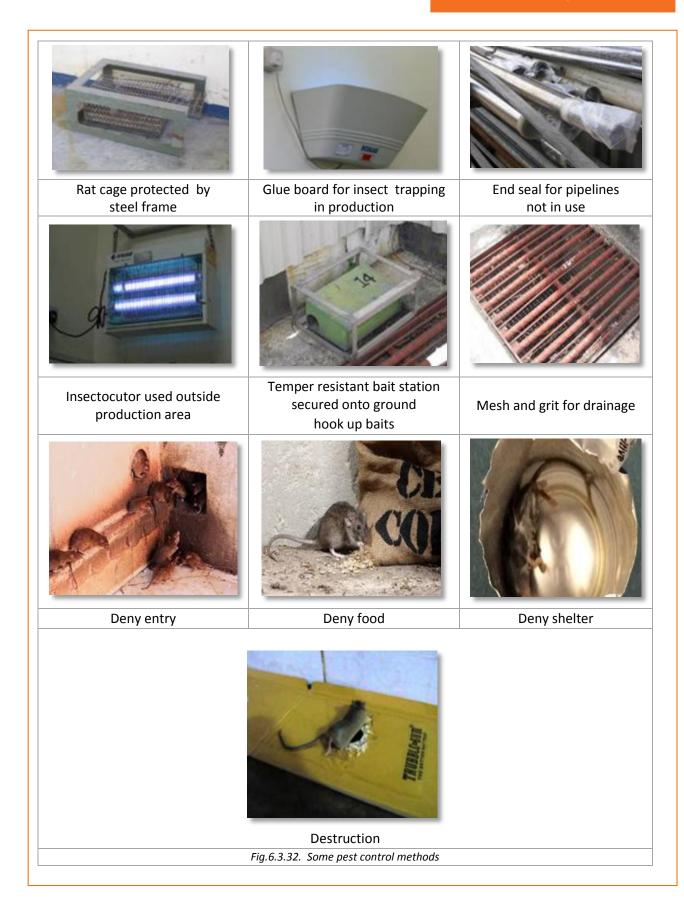
Fig.6.3.17. Avoid Cracks on walls as it allow bacteria and moulds to accumulate

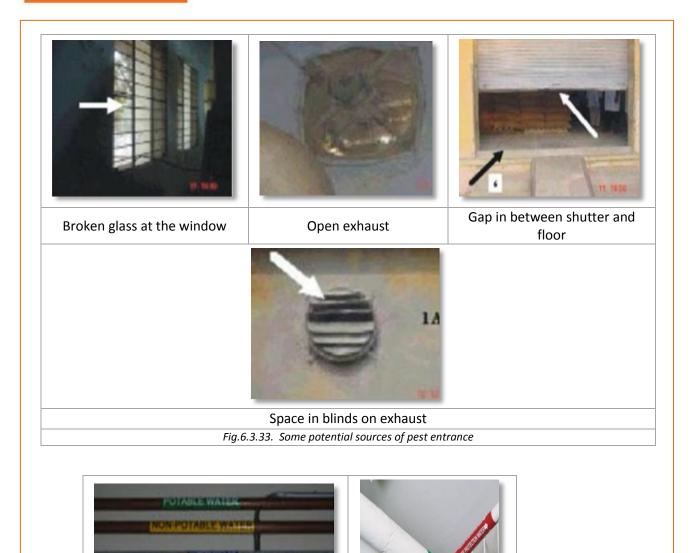




Fig.6.3.27. Food Transportation







HOT WATER RETURN

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

HOT WATER SYSTEM

HOT WATER SYSTEM (HW



Fig. 6.3.35. Waste categorisation with dedicated bins

Precautions:

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

Observation:

Sr no	Raw material	CCP limit to be maintained as per specifications	CCP limit maintained (Y/N)

Conclusion:

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

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

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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 problems quickly 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:

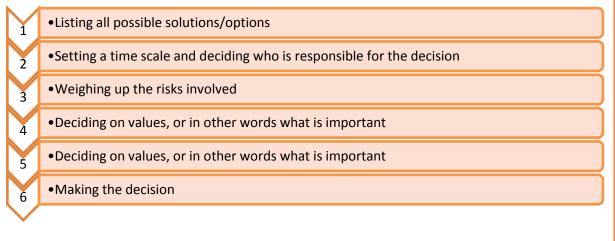


Fig.7.2.1 Steps for decision making

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.

		Ma	ark where	e you stand (C	ircle your ansv	wer)
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

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

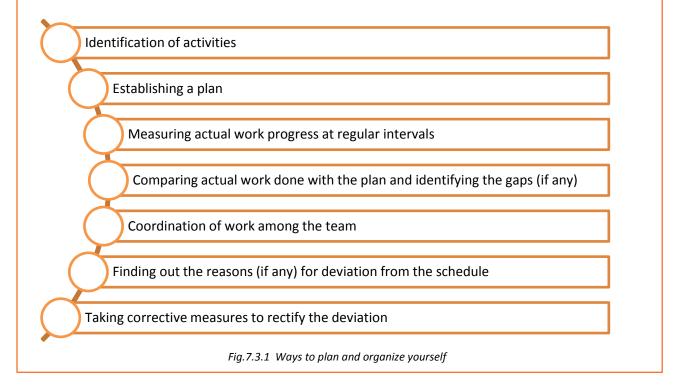
Unit Objectives 6

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

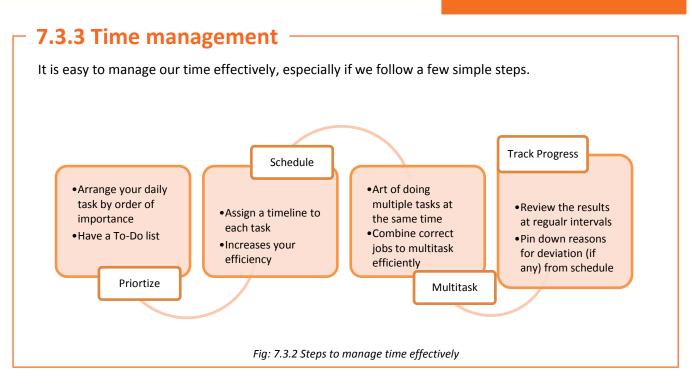
7.3.1 Ways to plan and organise yourself at workplace

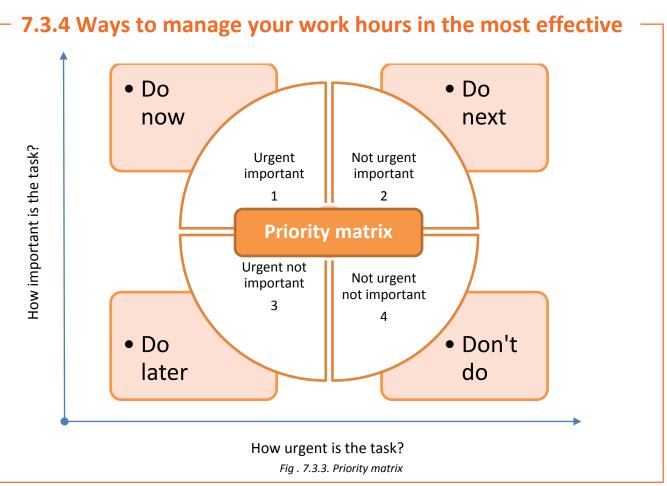
- Organising and planning is a process of completing a given task efficiently and successfully.
- Organising and planning includes:



7.3.2 Benefits of organising and planning

- 1. Write the benefits of organizing.
- 2. Write the benefits of planning.



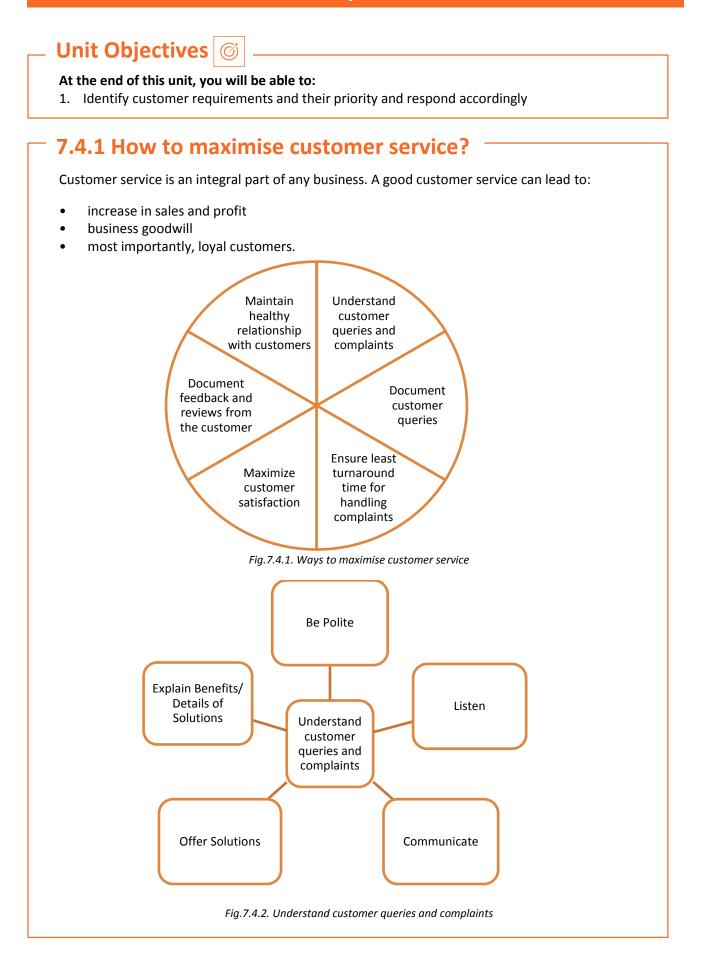


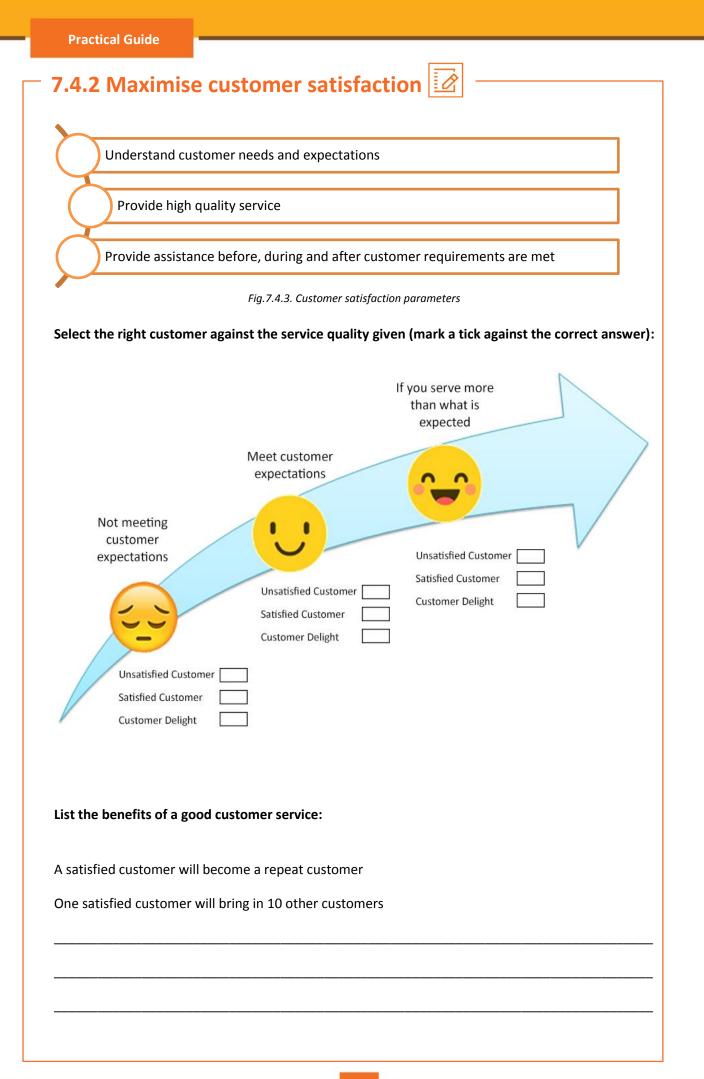
7.3.5 To-Do list

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



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.

7.5.2 Steps in problem solving



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 no	Steps to solve the problems	Notes for problem solving
	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	
4	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?	
6	Did I have a better way of solving the issue?	
U	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

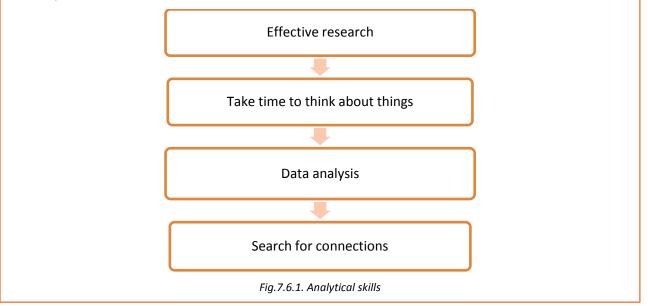
Unit Objectives 6

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 🧭 –

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

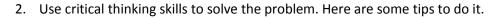
- 1. Develop critical thinking skills to prevent potential problems
- 2. Develop critical thinking skills to resolve issues

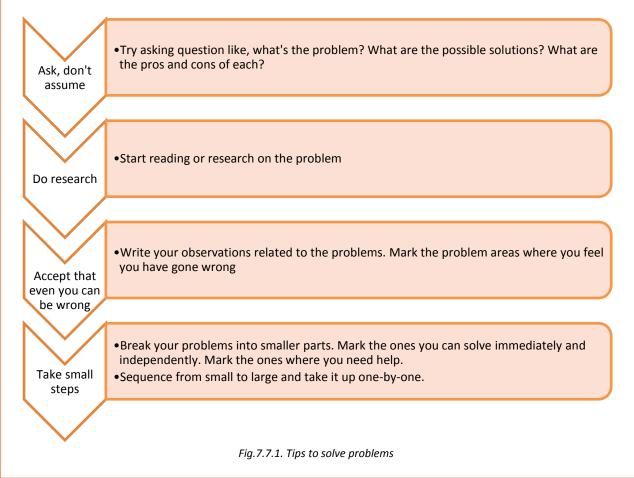
7.7.1 Critical thinking

- 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:





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Grain Mill Operator





सत्यमेव जयते GOVERNMENT OF INDIA MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP



Transforming the skill landscape



8. IT Orientation

Unit 8.1 - Basics of Information Technology

15 hrs





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

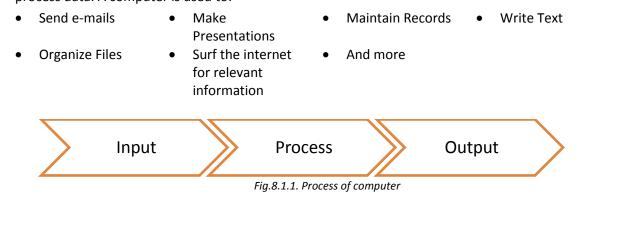
Computers are used in every field. They help organizations and individuals to conduct business transactions efficiently and quickly. Today, one of the basic skills necessary to succeed at a workplace is to know how to use the computer. To be able to get better jobs, you need to know how to use a computer.

8.1.2 Introduction 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.

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

The external components are the:									
٠	Monitor	٠	Keyboard	٠	Mouse	٠	System Unit	٠	Printer and Speakers
Th	The internal components are the:								

Motherboard
 Central Processing 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 is 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

8.1.4 Mouse

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.	

8.1.5 Keyboard

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.

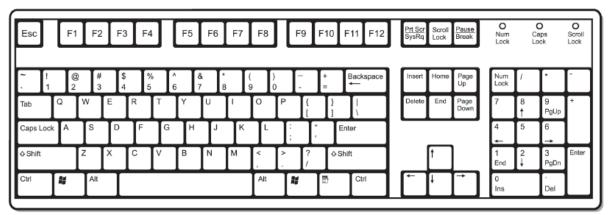
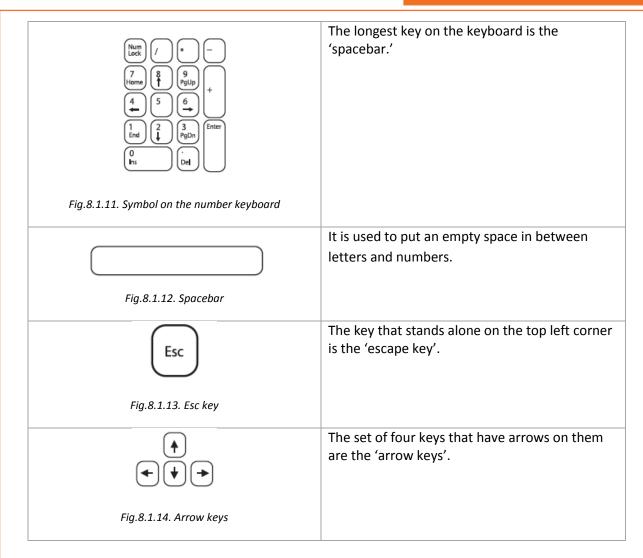
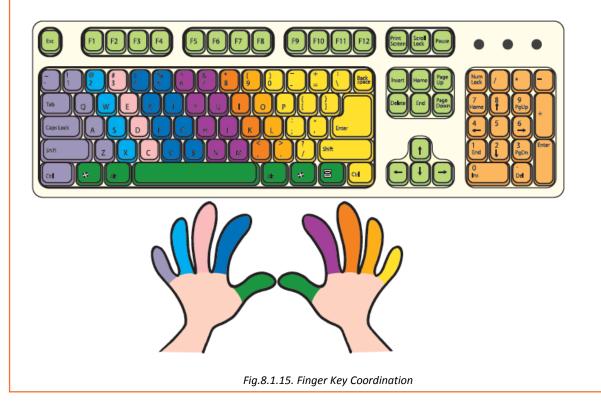


Fig.8.1.8. Keyboard

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{pmatrix} \begin{pmatrix} \land \\ 6 \\ 7 \end{bmatrix} \begin{pmatrix} \ast \\ 8 \\ 9 \end{bmatrix} \begin{pmatrix} 0 \\ 9 \\ 0 \end{bmatrix} $	The number keys (0 to 9) are called 'numeric keys'.
Fig.8.1.10. Numeric Keys	



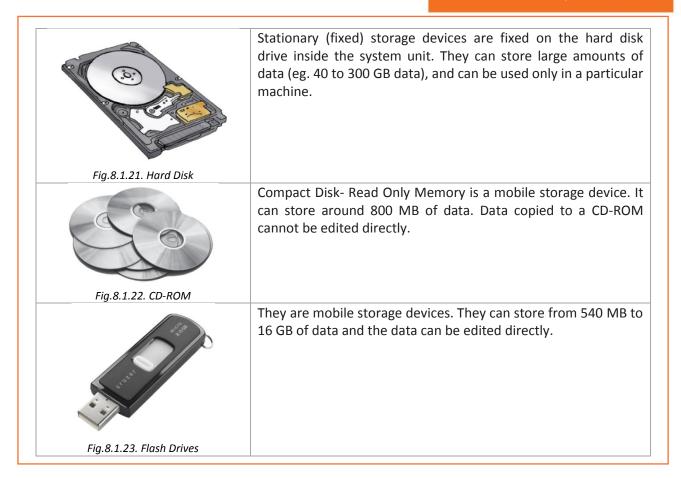
Finger Key Coordination



Practical Guide

- 8.1.6 Computer Peripherals –

	It is a device that prints text or illustrations on paper. There are different types of printers like dot-matrix, ink-Jet, laser etc.
Fig.8.1.16. Printer	All the parts are connected to system unit with cables or wires. The system unit in turn is connected to the main power supply.
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 electronic format.



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.

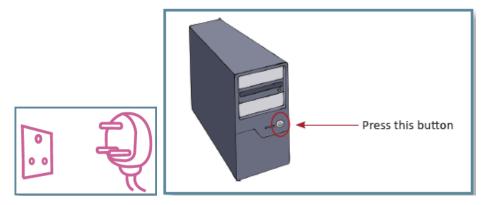


Fig.8.1.24. Plug in the computer to switch it on

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

N Microsoft OneNote 2010

Microsoft Por

Microsoft Outlook 2010

Microsoft Publisher 2010

soft Word 20

Nicrosoft SharePoint Works

.

Microsoft InfoPath Designer 2010

erPoint 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

Help and Support

Run...

Disconnect.

🐮 Start 🛛 🙆 Inbox - Aßeauchemin@g..

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.



Accessories

Cartup

Internet Explorer

MSN Explorer

Outlook Express

Remote Assistance

Micro

Practical Guide	
Notes 🛗 🛛	
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Grain Mill Operator







