

Syllabus for Food Processing and Analysis Laboratory Technician

Course Name	Food Processing and Analysis Laboratory Technician
Sector	Food Processing
Course Code	FPT/2024/FALT/417
Level	4
Occupation	Food Processing and Analysis Laboratory Technician
Job Description	Food Processing and Analysis Laboratory Technician will ensure the performance, efficiency, and maintenance of laboratory equipment and tools for food lab testing while upholding proper hygiene and safety standards. The ideal candidate will be responsible for analyzing food product quality and maintaining Good Manufacturing Practices (GMP) in accordance with the specifications and standards of the Food analysis and quality control laboratory.
Course Duration	Total Duration 510 Hrs (T- 120, P-270, OJT-60 and ES-60)
Trainees' Entry Qualification	<ul style="list-style-type: none"> • 12th grade pass Or • Completed 2nd year of 3-year diploma (after 10th) and pursuing regular diploma Or • 10th grade pass plus 2-year NTC Or • 10th grade pass plus 1-year NTC plus 1 year NAC Or • 8th pass plus 2-year NTC plus 1Year NAC plus CITS Or • 10th grade pass and pursuing continuous schooling Or • 10th Grade Pass with 2 year relevant experience Or • Previous relevant Qualification of NSQF Level 3.0 with minimum education as 8th Grade pass with 3 year relevant experience Or • Previous relevant Qualification of NSQF Level 3.5 with 1.5 year relevant experience
Trainers Qualification	<ul style="list-style-type: none"> • M. Sc./ M.Tech / M.E in Food Technology or Food Engineering or allied sector with 2yrs experience in relevant field • B.Sc or graduate/ B.Tech/BE in Food Technology or Food Engineering or allied sector with 3yrs experience in relevant field • B.Sc in Food or allied sector with 3yrs experience in relevant field • B.Sc in Home Science with 5yrs experience in relevant field • Diploma in Food Technology or Food Engineering with 4yrs experience in relevant field

Structure of Course:

Module No.	Module name	Outcome	Theory (Hrs)	Practical (Hrs)	Total (Hrs) [Multiple of 30]
1	Food processing machineries and equipment	Ensure performance, efficiency and maintenance of laboratory equipment and tools for food lab testing with proper hygiene and safety.	30	60	90
2	Quality Analysis and GMP	Analyze food product quality and maintain GMP as per the specifications and standards of the Food analysis and quality control laboratory.	30	90	120
3	Sampling, Analysis and Quality control	Perform Sampling, Analysis and Quality control of food materials as per the specifications and standards of the FSSAI organization.	40	80	120
4	Documentation and Record Keeping	Maintain records on sampling and analysis of raw materials, packaging materials, finished products, market sample, equipment calibration and regulatory requirements for different food lab activities	10	20	30
5	Food Safety, Hygiene and Sanitation	Maintain food safety standard, hygiene and sanitation in laboratory work area and food processing unit	10	20	30
	OJT	Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	--	60	60
	Employability Skill	As per guided curriculum	60	--	60
TOTAL:			180	330	510

SYLLABUS:**Module 1: Food processing machineries and equipment**

Outcome: Ensure performance, efficiency and maintenance of laboratory equipment and tools for food lab testing with proper hygiene and safety.

Theory Content:

- 1.1 Describe the laboratory standards protocol, process standards and food safety hygiene, standards in a laboratory environment.
- 1.2 Describe the internal processes like purchase, procurement, store management, inventory management.
- 1.3 State the materials and equipment used in the cleaning and maintenance of the laboratory work area.
- 1.4 Explain the common detergents and sanitizers used in cleaning laboratory work area and machineries.
- 1.5 Elaborate the methods of cleaning and sanitization.

- 1.6 Outline the process of prepare for scheduled production.
- 1.7 Describe the functions to be carried out before starting production.
- 1.8 State the types of raw materials, packaging materials used and finished products processed in the Laboratory.
- 1.9 Highlight the different types of maintenance procedures.
- 1.10 Prepare the machines and tools required for production.
- 1.11 Elaborate working principle and operation of laboratory equipment and machineries.

Practical Content:

- 1.1 Clean the work area using approved sanitizers and keep it free from dust, waste, and spillage.
- 1.2 Ensure that the work area is safe and hygienic for food analysis.
- 1.3 Check the working and performance of all machineries and tools used for process such as Filters, Clarifiers Vat Pasteurizer equipment, Plate Pasteurizer and HTST pasteurization equipment Homogenizer, milk Chillers. evaporator for condensed milk, Cooling and Spray Dryer, Homogenizer for cream, butter churner, ghee vat, Brix meter/refract meter, Viscosity Meter ,Electric mixer, Juice Extractor (Screw type), Pulper Electric, Mechanical peeler/ Batch type for fruit and vegetable peeling, Steam jacket kettle, Baby Boiler/Diesel fuel/capacity of boiler as per capacity of steam jacket kettle, Blanching Chamber, Auto claves, S.S.Vessels with lids, PH Meter (Digital), Thermometer (Digital), Laboratory Weighing Balance (Digital) – 20 kg capacity, Fruit Slicing Machine, Sealing Machine, Pickle Mixer, baking deck oven, planetary mixer, proofer, cutting and sheeting machine, cookies deposit machine manual, cooling rack, cake decoration tools, equipment for testing packaging materials etc.
- 1.4 Clean the equipment and glass wares used with recommended sanitizers.
- 1.5 Dispose waste materials as per guideline of pollution control board.
- 1.6 Identify proper packaging materials for finished product packaging.

Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook

Tools, Equipment and Other Requirements:

Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual., Filters, Clarifiers Vat Pasteurizer equipment, Plate Pasteurizer and HTST pasteurization equipment Homogenizer, milk Chillers. evaporator for condensed milk, Cooling and Spray Dryer, Homogenizer for cream, butter churner, ghee vat, Brix meter/refractometer, Refrigerator, Fruit tray, Cutting knives, Electric mixer, Pressure cooker, Coring knives, Pitting knives, Juice Extractor (Screw type), Pulper Electric, Mechanical peeler/ Batch type for fruit and vegetable peeling, Steam jacket kettle, Baby Boiler/Diesel fuel/capacity of boiler as per capacity of steam jacket kettle, Blanching Chamber, Auto claves, S.S.Vessels with lids (20 lt capacity), S.S. Vessels with lids (6 lt capacity), S.S.Vessels with lids (10 lt capacity) PH Meter (Digital), Thermometer (Digital), Beakers, Conical Flasks, Measuring Cylinder, Utensils, Measuring Flask, Burrete with Stands, Pipettes Of Assorted Sizes, Glass Funnels, Test Tubes with Stand, Steel dekchi, Steel gamla, Steel hata and khunti, Weighing Balance (Digital) -120 gm capacity, Laboratory Weighing Balance (Digital) – 20 kg capacity, Gas Burner With Cylinder, Fruit cutting table (SS made), Stainless Steel Mug, Hand Peelers, Water Tank, Fruit Slicing Machine, Sealing Machine, Pickle Mixer, Milk analyzer, Glass jar 500 g capacity, baking deck oven, baking tray, planetary mixer, proofer, cutting and sheeting machine, bread pan, cake pan, biscuit dice, cookies deposit machine manual, cooling rack, cake decoration tools,

Module 2: Quality Analysis and GMP

Outcome: Analyze food product quality and maintain GMP as per the specifications and standards of the Food analysis and quality control laboratory.

Theory Content:

- 2.1 Identify the equipment used for food product quality analysis.
- 2.2 Explain the SOP for the calibration of the equipment used for quality analysis.
- 2.3 Describe calibration procedure of equipment like weighing scale, pH meter, brix meter etc on daily basis
- 2.4 Illustrate working principle and performance of all equipment such as hot air Oven, Muffle Furnace, pH Meter, Infrared Moisture Meter, Sieve Shaker, Autoclave, Weighing Balance, Magnetic Stirrer, Thermometer, Centrifuge, Hot Water Bath, Burette, Vacuum Drier, Colony Counter (Electronic Digital), B.O.D Incubator, Microscope, Soxhlet Extraction Unit, Round Heating Plate, Heating Mantles, Kjeldhal Digestion Unit, Laminar Air Flow, Hand Refractometer.
- 2.5 Record all details on lab equipment activity like performance, faults, repairs, annual maintenance etc. in the equipment register.
- 2.6 Illustrate SOP for preparation of reagents and solvent.
- 2.7 Prepare standards solution for calibration of equipment.
- 2.8 Maintain the stock book of lab chemicals, glass wares, consumables items, equipment spares at regular intervals in the register.
- 2.9 Describe the SOP for housekeeping in laboratory area.
- 2.10 Maintain all housekeeping activity in a register.

Practical Content:

- 2.1 Collect operational manual and procedure of all equipment.
- 2.2 Identify the standard operating procedures (SOP) for calibration of each Equipment such as hot air Oven, Muffle Furnace, pH Meter, Infrared Moisture Meter, Sieve Shaker, Autoclave, Weighing Balance, Magnetic Stirrer, Thermometer, Centrifuge, Hot Water Bath, Burette, Vacuum Drier, Colony Counter (Electronic Digital), B.O.D Incubator, Microscope, Soxhlet Extraction Unit, Round Heating Plate, Heating Mantles, Kjeldhal Digestion Unit, Laminar Air Flow, Hand Refractometer.
- 2.3 Calibrate equipment like weighing scale, pH meter, brix meter etc on daily basis.
- 2.4 Check the working condition and performance of all equipments on regular basis
- 2.5 Maintain annual maintenance contract of all equipment.
- 2.6 Follow SOP for preparing each chemical reagent.
- 2.7 Prepare chemicals and solvents for preparation of standard solution.
- 2.8 Prepare standards solutions for calibration of equipment.
- 2.9 Prepare distilled water for laboratory use.
- 2.10 Maintain stock list of all chemicals, solvents, acids, reagents, glass wares, consumables, equipment spares etc used in the laboratory.
- 2.11 Prepare purchase requisition for lab chemicals, glass wares, consumables, equipment spares as per requirement.
- 2.12 Clean the glassware used for analysis with recommended detergents.
- 2.13 Identify the SOP and checklist for housekeeping.
- 2.14 Maintain CIP, GMP, GHP, in a laboratory work place.

Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook

Tools, Equipment and Other Requirements:

Protective Gloves, Head Caps, Aprons, Mouth Masks, Sanitizer, Food Safety Manual, Test Tubes, Round Bottom Flasks, Wire Gauges, Bunsen, Burner, Mortar and Pestle, Funnels, Vernier Calipers, Beakers, Flasks, hot air Oven, Muffle Furnace, pH Meter, Infrared Moisture Meter, Sieve Shaker, Autoclave, Weighing Balance, Magnetic Stirrer, Thermometer, Centrifuge, Hot Water Bath, Burette, Vacuum Drier, Colony Counter (Electronic Digital), B.O.D Incubator, Microscope, Soxhlet Extraction Unit, Round Heating Plate, Heating Mantles, Kjeldhal Digestion Unit, Laminar Air Flow, Hand Refractometer, LPG Cylinder, Gerber centrifuge.

Module 3: Sampling, Analysis and Quality control

Outcome: Perform Sampling, Analysis and Quality control of food materials as per the specifications and standards of the FSSAI organization.

Theory Content:

- 3.1 Describe the sampling of raw material following SOP.
- 3.2 Describe the sampling of packaging material.
- 3.3 Record the labelling of samples.
- 3.4 Record samples details in the register.
- 3.5 Prepare chemical reagent for sample analysis
- 3.6 Perform the analysis of the sample in calibrated equipment.
- 3.7 Perform the analysis of the packaging material.
- 3.8 Record the result in the record register.
- 3.9 Analyze the results and observation.
- 3.10 Interpret the results as per the standard guidelines.

Practical Content:

- 3.1 Prepare for the sampling as per guideline and instructions food lab in-charge.
- 3.2 sample the raw materials (packet food items, ingredients, flavors, emulsifiers, preservatives etc) from different area following SOP.
- 3.3 sample the packaging materials (bottle, cap, crown, can, carton, label, pouch etc) from the Different area following SOP
- 3.4 Collect samples from the production line/process line based on the frequency.
- 3.5 Collect sample of the finished product(s) from the production area and food processing lab.
- 3.6 Received sample from the market such as customer/consumer complaint samples, market samples.
- 3.7 Analyze samples labelling details like sample name, date and time of sampling, batch/manufacture /expiry details.
- 3.8 Transfer the samples to food lab and place in the designated area for analysis
- 3.9 Record the sample details and test report in the lab register.

Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook

Tools, Equipment and Other Requirements:

Protective Gloves, Head Caps, Aprons, Mouth Masks, Sanitizer, Food Safety Manual, Test Tubes, Round Bottom Flasks, Wire Gauges, Bunsen, Burner, Mortar and Pestle, Funnels, Vernier Callipers, Beakers, Flasks, hot air Oven, Muffle Furnace, pH Meter, Infrared Moisture Meter, Sieve Shaker, Autoclave, Weighing Balance, Magnetic Stirrer, Thermometer, Centrifuge, Hot Water Bath, Burette, Vacuum Drier, Colony Counter (Electronic Digital), B.O.D Incubator, Microscope, Soxhlet Extraction Unit, Round Heating Plate, Heating Mantles, Kjeldhal Digestion Unit, Laminar Air Flow, Hand Refractometer, LPG Cylinder,

Module 4: Documentation and Record Keeping

Outcome: Maintain records on sampling and analysis of raw materials, packaging materials, finished products, market sample, equipment calibration and regulatory requirements for different food lab activities.

Theory Content:

- 4.1 Describe the process of maintaining records of all raw materials and packaging materials sampled like

place of sampling, sampling procedure, details of sample such as supplier information, batch number, receiving date/ date of manufacture, expiry date, supplier quality document, supplier documents, condition of raw material as per guideline of organization.

4.2 Describe the process of records on raw materials and packaging material analysis such as parameters analyzed, method of analysis, storage of sample, equipments used for analysis, analysis results, certificate of calibration.

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

4.4 Elaborate the information of equipments used for analysis, condition of the equipment, equipment parameter, equipment performance, time taken for analysis, etc.

4.6 Highlight documentary records of equipment calibration such as date of calibration, procedure and method used for calibration, errors/variations observed, internal and external calibration reports, reagents used for calibration, condition of the equipment, etc.

Practical Content:

4.1 Describe the documentation system followed in the food testing laboratory.

4.2 Highlight the maintenance of all raw materials and packaging materials sampled as per standards.

4.3 Conduct details recording of equipment, calibration data, analysis results.

4.4 Demonstrate the maintenance of equipment used for analysis, as per company standards.

4.5 Examine the quality analysis report.

4.6 Perform documentation of records on analysis of production samples.

4.7 Perform documentation of records on analysis of finished products.

4.8 Perform documentation of records on analysis of shelf-life samples.

4.9 Perform documentation of records on analysis of market samples

Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook

Tools, Equipment and Other Requirements:

Food Safety Manual, Log Books.

Module 5: Food Safety, Hygiene and Sanitation

Outcome: Maintain food safety standard, hygiene and sanitation in laboratory work area and food processing unit

Theory Content:

5.1 Comply with food safety and hygiene procedures followed in the food testing laboratory.

5.2 Describe procedure of personal hygiene by use of gloves, hairnets, masks, ear plugs, goggles, shoes, etc.

5.3 Illustrate hygienic production of food by inspecting raw materials, ingredients, finished products, etc.

5.4 Elaborate housekeeping practices in designated area for materials/tools.

5.5 Outline industry standards such as GMP and HACCP and product recall process.

5.6 Explain types of hazards such as physical, chemical and biological hazards and measures to control and prevent them.

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

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

Practical Content:

5.1 Apply food safety and hygiene procedures followed in an organization

5.2 Demonstrate hygienic production of food by inspecting raw material, ingredients and finished product.

5.3 Demonstrate the use of safety equipment.

5.4 Apply industry standards such as GMP, GHP and HACCP.

5.5 Carry out workplace checklist audit before and after work to ensure safety.

5.6 Perform documentation of raw material, packaging material, process and finished products.

5.7 Perform the storage of raw material, finished products and allergens separately.

5.8 Perform labelling of raw material and finished products and store them in designated area.

Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook

Tools, Equipment and Other Requirements:

Food Safety Manual, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Covers, Sanitizer, Food Safety Manual, Log Books etc

Module Name: OJT

Outcome: Work in real job situation with special emphasis on basic safety and hazards in this domain

Practical Content:

Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for **60 Hours.**)

Tools, Equipment and Other Requirements: (to be available at the place of OJT)

Filters, Clarifiers Vat Pasteurizer equipment, Plate Pasteurizer and HTST pasteurization equipment Homogenizer, milk Chillers. evaporator for condensed milk, Cooling and Spray Dryer, Homogenizer for cream, butter churner, ghee vat, Juice Extractor (Screw type), Pulper Electric, Mechanical peeler/ Batch type for fruit and vegetable peeling, Steam jacket kettle, Baby Boiler/Diesel fuel/capacity of boiler as per capacity of steam jacket kettle, Blanching Chamber, Auto claves, Water Tank, Fruit Slicing Machine, Sealing Machine, Pickle Mixer, Milk analyzer, baking deck oven, baking tray, planetary mixer, proofer, cutting and sheeting machine, bread pan, cake pan, biscuit dice, cookies deposit machine manual, cooling rack, cake decoration tools, rice milling machine, Wheat Milling machine. Dal mill, Edible oil extractor, can reformer, can flanger, can seamer, exhaust box, blanching unit, canning retort, vacuum tray drier, fluidized bed dryer, spray dryer, Drum dryer, tunnel dryer, conveyer belt dryer, plate freezer, air blast freezer, liquid nitrogen spray freezer.

Module Name: Employability Skills (60 Hrs)

Key Learning Outcomes

Introduction to Employability Skills

Duration: 1.5 Hours

After completing this programme, participants will be able to:

1. Discuss the Employability Skills required for jobs in various industries
2. List different learning and employability related GOI and private portals and their usage

Constitutional values - Citizenship

Duration: 1.5 Hours

3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
4. Show how to practice different environmentally sustainable practices.

Becoming a Professional in the 21st Century

Duration: 2.5 Hours

5. Discuss importance of relevant 21st century skills.
6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
7. Describe the benefits of continuous learning.

Basic English Skills

Duration: 10 Hours

8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
9. Read and interpret text written in basic English
10. Write a short note/paragraph / letter/e -mail using basic English

Career Development & Goal Setting

Duration: 2 Hours

11. Create a career development plan with well-defined short- and long-term goals

Communication Skills

Duration: 5 Hours

12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

Diversity & Inclusion

Duration: 2.5 Hours

15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
16. Discuss the significance of escalating sexual harassment issues as per POSH act.

Financial and Legal Literacy

Duration: 5 Hours

17. Outline the importance of selecting the right financial institution, product, and service
18. Demonstrate how to carry out offline and online financial transactions, safely and securely
19. List the common components of salary and compute income, expenditure, taxes, investments etc.
20. Discuss the legal rights, laws, and aids

Essential Digital Skills

Duration: 10 Hours

21. Describe the role of digital technology in today's life
22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
24. Create sample word documents, excel sheets and presentations using basic features
25. utilize virtual collaboration tools to work effectively

Entrepreneurship

Duration: 7 Hours

26. Explain the types of entrepreneurship and enterprises

27. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
29. Create a sample business plan, for the selected business opportunity

Customer Service

Duration: 5 Hours

30. Describe the significance of analyzing different types and needs of customers
31. Explain the significance of identifying customer needs and responding to them in a professional manner.
32. Discuss the significance of maintaining hygiene and dressing appropriately

Getting Ready for apprenticeship & Jobs

Duration: 8 Hours

33. Create a professional Curriculum Vitae (CV)
34. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
35. Discuss the significance of maintaining hygiene and confidence during an interview
36. Perform a mock interview
37. List the steps for searching and registering for apprenticeship opportunities

Learning Outcome – Assessment Criteria

Module No.	Outcome	Assessment Criteria
1	Ensure performance, efficiency and maintenance of laboratory equipment and tools for food lab testing with proper hygiene and safety.	<p>After completion of this module students will be able to:</p> <p>1.1 Clean and maintain the cleanliness of the work area using approved sanitizers and keep it free from dust, waste, and spillage.</p> <p>1.2 Examine the work area is safe and hygienic for food analysis.</p> <p>1.3 Check the working and performance of all machineries and tools used in food testing laboratory.</p> <p>1.4 Clean the equipments and glass wares used with recommended sanitizers following specifications and Laboratory standards</p> <p>1.5 Dispose waste materials as per defined sops and industry requirements.</p> <p>1.6 Attend minor repairs/faults of equipments, if required.</p> <p>1.7 Arrange raw materials and equipments for production.</p> <p>1.8 Identify proper packaging materials for finished product packaging.</p>
2	Analyze food product quality and maintain GMP as per the specifications and standards of the Food analysis and quality control laboratory.	<p>After completion of this module students will be able to:</p> <p>2.1 Apply the instructions from the food lab technician</p> <p>2.2 Identify the standard operating procedures (SOP) for calibration of each Equipments such as hot air Oven, Muffle Furnace, pH Meter, Infrared Moisture Meter, Sieve Shaker, Autoclave, Weighing Balance, Magnetic Stirrer, Thermometer, Centrifuge, Hot Water Bath, Burette, Vacuum Drier, Colony Counter (Electronic Digital), B.O.D</p>

Module No.	Outcome	Assessment Criteria
		<p>Incubator, Microscope, Soxhlet Extraction Unit, Round Heating Plate, Heating Mantles, Kjeldhal Digestion Unit, Laminar Air Flow, Hand Refractometer.</p> <p>2.3 calibrate equipments like weighing scale, measuring jars, pH meter etc on daily basis.</p> <p>2.4 record the reading in the calibration register</p> <p>2.5 operate all equipments and instruments.</p> <p>2.6 check the working and performance of all equipments on regular basis</p> <p>2.7 inform the supplier/manufacturer on the malfunction/repairs and get it repaired immediately</p> <p>2.8 maintain list of all equipments along with the details of annual maintenance contract.</p> <p>2.9 Identify the SOP for preparing each reagent.</p> <p>2.10 weight required chemicals and measure solvents in calibrated instruments and measuring jars</p> <p>2.11 prepare solvents and chemicals and maintain required conditions following the procedure for preparing the reagents</p> <p>2.12 prepare standards solutions for calibration of equipments</p> <p>2.13 prepare distilled water for laboratory use.</p> <p>2.14 prepare distilled water and standard solutions all time in food testing lab.</p> <p>2.15 store the chemicals, solvents, acids, reagents etc following laboratory procedures and standards.</p> <p>2.16 maintain list of all chemicals, solvents, acids, reagents, glass wares, consumables, equipment spares etc used in the laboratory.</p> <p>2.17 check the inventory of lab chemicals, glass wares, consumables, equipment spares at regular intervals in the register and erp and update lab technician on the inventory status.</p> <p>2.18 prepare purchase requisition for lab chemicals, glass wares, consumables, equipment spares with the approval of superiors, and process requisition</p> <p>2.19 clean the glassware used for analysis with recommended detergents, disinfectants and sanitizers.</p> <p>2.20 Identify the SOP and checklist for housekeeping.</p> <p>2.21 Record the housekeeping checklist.</p> <p>2.22 maintain records on all documents related to the housekeeping activity.</p>
3	Perform Sampling, Analysis and Quality control of food materials as per the specifications and standards of the FSSAI organization.	<p>After completion of this module students will be able to:</p> <p>3.1 Prepare for the sampling as per guideline and instructions food lab in-charge.</p> <p>3.2 sample out the raw materials (packet food items, ingredients, flavors, emulsifiers, preservatives etc) from different area following SOP.</p> <p>3.3 sample out the packaging materials (bottle, cap, crown,</p>

Module No.	Outcome	Assessment Criteria
		<p>can, carton, label, pouch etc) from the Different area following SOP</p> <p>3.4 perform production samples from the production line/process line based on the frequency followed by the organisation (for analysis and to maintain production control sample)</p> <p>3.5 perform sampling of the finished product(s) from the production area and food processing lab.</p> <p>3.6 collect samples received from the market such as customer/consumer complaint samples, market samples.</p> <p>3.7 Perform samples labelling with details like sample name, date and time of sampling, batch/manufacture /expiry details.</p> <p>3.8 collect all documents pertaining to incoming lab samples like copy of purchase order, minvoice, certificate of analysis etc for verification and records</p> <p>3.9 transfer the samples to food lab and place in the designated area for analysis</p> <p>3.10 record the sample details in the lab register.</p> <p>3.11 maintain all documents related to sample along with the test report</p>
4	<p>Maintain records on sampling and analysis of raw materials, packaging materials, finished products, market sample, equipment calibration and regulatory requirements for different food lab activities</p>	<p>After completion of this module students will be able to:</p> <p>4.1 understand the documentation system followed in the food testing laboratory.</p> <p>4.2 Perform the maintenance of all raw materials and packaging materials sampled as per standards.</p> <p>4.3 Conduct details recording of equipment, calibration data, analysis results.</p> <p>4.4 Demonstrate the maintenance of equipment used for analysis, as per company standards.</p> <p>4.5 Examine the quality analysis report.</p> <p>4.6 Perform documentation of records on analysis of production samples.</p> <p>4.7 Perform documentation of records on analysis of finished products.</p> <p>4.8 Perform documentation of records on analysis of shelf-life samples.</p> <p>4.9 Perform documentation of records on analysis of market samples</p> <p>4.10 Verify the documents and track from analysis report to equipment used, in case of quality concerns and for quality management system audits.</p>
5	<p>Maintain food safety standard, hygiene and sanitation in laboratory work area and food processing unit</p>	<p>After completion of this module students will be able to:</p> <p>5.1 Apply food safety and hygiene procedures followed in an organization</p> <p>5.2 Demonstrate hygienic production of food by inspecting raw material, ingredients and finished product.</p> <p>5.3 Demonstrate the use of safety equipment.</p> <p>5.4 Apply industry standards such as GMP, GHP and HACCP.</p> <p>5.5 Carry out workplace checklist audit before and after work to ensure safety.</p> <p>5.6 Perform documentation of raw material, packaging material, process and finished products.</p>

Module No.	Outcome	Assessment Criteria
		5.7 Perform the storage of raw material, finished products and allergens separately. 5.8 Perform labelling of raw material and finished products and store them in designated area.
6	OJT	Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for 60 Hours.)
7	Employability Skill	As per guided curriculum

List of Tools, Equipment & materials needed for 30 Trainees (Practical)

Sl No	Items Name	Specification	Qty
1	Gerber Centrifuge Machine	<p>Description :</p> <p>Electric Gerber Machine for 24 Test with Mechanical Brake, 0-30 Minutes Timer, Stainless Steel Disc. & Protective cover. Supply with accessories Milk Testing Kit Type : For FAT/SNF Testing Unit : Set Description :2.0000</p> <p>Each Kit Consisting of:</p> <p>Std. Pack</p> <p>a. Milk Butyrometer 0 - 10 % 20 "BENNY" - Tested</p> <p>b. Lock Stopper - Brass Cap 60</p> <p>c. Lock Stopper Key - Aluminium 06</p> <p>d. Milk Pipette 10.75 ml 06 "BENNY"</p> <p>e. Plastic Tilt Measure - 1ml 06 with bottle</p> <p>f. Plastic Tilt Measure - 10 ml 06 With bottle</p> <p>g. Sample Bottle 85 ml 50</p> <p>h. Plastic Sample Bottle Stand 03 12 holes</p> <p>i. Plastic Butyrometer Shaking 03 Stand - 12 holes</p> <p>j. Plastic Butyrometer Holding 03 Stand - 12 holes</p> <p>k. Plastic Pipette Stand 02</p> <p>l. Nylon Butyrometer Cleaning Brush 01 gross</p> <p>m. Nylon Pipette Cleaning Brush 01 gross</p> <p>n. Nylon Sample Bottle Cleaning Brush 01 gross</p> <p>o. Stainless Steel Sample Dipper 02 100 ml</p> <p>p. Plastic Dropping Bottle 06 250 ml</p> <p>q. Thermometer 0 - 110°C Alcohol 10</p>	01

Sl No	Items Name	Specification	Qty
		Research r. Lactometer 0 - 40° at T 84°F 12 Tested s. Plastic Lactometer Jar - small 06 t. Stainless Steel Can Plunger 01 u. Anyl Alcohol - Grade A 02 Ltr. v. Con sulphuric acid 02 Ltr.	
2	Refrigerator	Refrigerator	1
3	Fruit tray	Fruit tray	06
4	Cutting knives	Cutting knives	06
5	Electric mixer	Electric mixer	01
6	Pressure cooker	Pressure cooker	01
7	Coring knives	Coring knives	02
8	Pitting knives	Pitting knives	02
9	Gloves and Head Cover	Gloves and Head Cover	06
10	S.S.Vessels with lids (20 lt capacity)	S.S.Vessels with lids (20 lt capacity)	04
11	S.S. Vessels with lids (6 lt capacity)	S.S. Vessels with lids (6 lt capacity)	06
12	S.S.Vessels with lids (10 lt capacity)	S.S.Vessels with lids (10 lt capacity)	04
13	Thermometer (Digital)	Thermometer (Digital)	02
14	Beakers	Beakers	06
15	Conical Flasks	Conical Flasks	06
16	Measuring Cylinder	Measuring Cylinder	06
17	Utensils	Utensils	05
18	Measuring Flask	Measuring Flask	06
19	Burrete with Stands	Burrete with Stands	03
20	Pipettes Of Assorted Sizes	Pipettes Of Assorted Sizes	06
21	Glass Funnels	Glass Funnels	06
22	Test Tubes with Stand	Test Tubes with Stand	04
23	Glass Rod	Glass Rod	06
24	Steel dekchi	Steel dekchi	06
25	Steel gamla	Steel gamla	06
26	Steel hata and khunti	Steel hata and khunti	06
27	Brinometer	Brinometer	02
28	Hydrometer	Hydrometer	02
29	Weighing Balance (Digital) -120 gm capacity	Weighing Balance (Digital) -120 gm capacity	02
30	Laboratory Weighing Balance (Digital) – 20 kg capacity	Laboratory Weighing Balance (Digital) – 20 kg capacity	02
31	Gas Burner With Cylinder	Gas Burner With Cylinder	01
32	Fruit cutting table (SS made)	Fruit cutting table (SS made)	01
33	Stainless Steel Mug	Stainless Steel Mug	02
34	Cutting Knives	Cutting Knives	06
35	Hand Peelers	Hand Peelers	06
36	Water Tank	Water Tank	01
37	Fruit Slicing Machine	Fruit Slicing Machine	01
38	Heat Sealing Machine	Heat Sealing Machine	01
39	Glass jar 500 g capacity	Glass jar 500 g capacity	30
40	Hot air oven (18''×18''×24'') inch size	Hot air oven (18''×18''×24'') with blower digital temp (Multispan) and time control, inside made of 304SS of 20gage, outside of MS with powder coated finish, ball catcher heavy door. Three side heating elements, Standard double wall febrication, Inner chamber made of highly	1

Sl No	Items Name	Specification	Qty
		polished stainless steel sheet, Exterior fabricated out of thick mild steel duly finished in white stoving enamel with mat finished colour combinations, Quick and uniform heating in range of 50°C to 250°C \pm 2°C controlled by capillary type thermostat, L-shaped thermometer is built-in type, Control panel is provided with selector switch (Maltispan) of high or low rates of power thermostat control knob and indicators for mains & thermostat.	
41	Autoclave (Dia. 18 inch x Hight 24 inch) (4KW) double coil	Autoclave (Dia. 18 inch x Hight 24 inch) (4KW) double coil, double wall, digital temperature controller, timer arrangement vertical with control cut off pressure (15-30psig) temperature indicator, inner and outer wall 304SS of 14gage, heavy lid and ring made of 304SS of 10gage, 304SS of 20gage perforated Basket with handle. It is equipped with pressure guage, steam release valve and safety valves. Pressure Controls by spring Valves, Fitted with silicon rubber gasket jointless, to work on 230 volts A./C. only. Autoclave have central out let at the bottom and also have water level indicator outside. The chamber is absolutely leak proof & can be operated at any selected point in between 5 to 30 pound per sq.inch pressure. Product have approved CE & ISO certification.	1
42	Kjheldhal distillation unit 500ml capacity	Kjheldhal distillation unit 500ml capacity provided with condenser rack, stand, clamp, six test heater type. Six set of Kjheldhal flask 500ml (borosil) and Six set of 1.5ft bulb type condensers (borosil), connector, adaptor, dropper funnel with stop cock of proper size (borosil), all have standard joint B24/B29 and silicon tube needed for water connection and water discharge through condensers. Each heater made by high quality nicrom wire with cotton cover and thermostat controlled arrangement with regulator. Supply with extra two set of Kjheldhal flask 500ml (borosil) and two set of 1.5ft bulb type condensers (borosil), connector, adaptor, dropper funnel with stop cock of proper size (borosil).	1
43	Kjheldhal digestion unit, lab std 500ml capacity	Kjheldhal digestion unit, lab std 500ml capacity, six test heater type, six set of Kjheldhal flask 500ml(borosil) and supporting stand and clamp and exhaust pipe. Each heater made by high quality nicrom wire and thermostat controlled arrangement.	1

Sl No	Items Name	Specification	Qty
44	Rectangular hot plate of, (10''×16''×9'') inch size.	Rectangular hot plate of, (10''×16''×9'') 304SS top of 10 gauge, Exterior fabricated out of thick mild steel duly finished in white stoving enamel with mat finished colour combinations, Quick and uniform heating in range of 50°C to 200°C ±2°C, digital temperature indicator cum controller (Maltispan) and switch and indicating lamp in one side of hot plate not in bottom of the plate body.	1
45	Heating Mantle , heating up to 350°C of 5 lit capacity	Heating Mantle , Each heater made by high quality nicrom wire with cotton cover and thermostat controlled arrangement Heating Mantles have decently painted aluminium metal body with energy regulator, switch and indicating lamp in one side of mantle, heating up to 350°C of 5 lit capacity.	2
46	Heating Mantle , heating up to 350°C of 2 lit capacity	Heating Mantle , Each heater made by high quality nicrom wire with cotton cover and thermostat controlled arrangement Heating Mantles have decently painted aluminium metal body with energy regulator, switch and indicating lamp in one side of mantle, heating up to 350°C of 2 lit capacity.	2
47	Digital pH Meter, Range : 0 to 14pH	Digital bench top pH Meter, Range : 0 to 14pH (mV upto 1999mV), Resolution : 0.01pH (±1mV), Accuracy : 0.01pH, •±1 digit (1mV, •±1digit), Temperature compensation : 0°C to 100°C (manual), 7 segment 3.5 Digit Green LED Display with automatic polarity and decimal indications, With one combination electrode, stand, clamp, buffers, dust cover & operation manual. Manual calibration by adjust of knob with buffer facility. The electrode is a glass body, refillable, single junction pH electrode with a DIN connector. This electrode has a single ceramic junction in the outer reference cell and the pH sensing portion is made with general purpose glass. This pre-amplified electrode features a built-in temperature sensor for temperature compensated measurements in a single probe design. This design consideration is ideal for laboratory and general purpose use. Supply with pH 4.01 buffer, pH 7.00 buffer pH 9.2 buffer capsule box of each pH.	2
48	Physical rough balance Capacity=30 Kg	Physical rough balance, Table Top Balance	2

Sl No	Items Name	Specification	Qty
		Capacity: 30 Kg Readability: 1g Linearity: 2g Repeatability: 1g Power Supply: 220V + 10 V AC Pan Size: 250×330mm Frequency: 50 Hz Rust proof Stainless Steel body and pan Battery Back Up To 60 Hours Powder Coated & Robust Structure to suit rough environmental Conditions Overload Protection Low Battery Alarm Indication	
49	Magnetic Starrer, with Hot Plate	Magnetic Starrer, with Hot Plate, with step less Speed control and 304 S.S. body and top. Stirring capacity 5lt liquid. It utilises magnetic field created by a Heavy duty permanent magnet which induces variable speed stirring action. Stirring is accomplished by means of small teflon rotor, which when placed to be stirred is capable or rotation by magnetic field applied from below the container. Fitted with pilot lamp.	1
50	B.O.D cooling incubator	B.O.D COOLING INCUBATOR Cooling BOD incubator, combined low & high temperature, provided with precise electronic temperature control with digital readout a) Construction: Double-walled with adequate polystyrene and glass wool insulation. b) Inner Chamber: Stainless Steel, (304SS of 20gauge) duly polished with different shelf positions. c) Outer Walls: CRC Steel Sheet, scraped and treated with anti-corrosive primer and finished with powder coating. d) Outer Door: The outer door will be double walled duly insulated and provided with magnetic strip gasket with proper sealing and locking device with anti-corrosive primer and finished with powder coating.	1

Sl No	Items Name	Specification	Qty
		<p>e) Inner Door: An Acrylic door is provided.</p> <p>f) Inner chamber made of 304 grade quality Stainless Steel. Wall side 20 gauge thickness sheets & Tray side 18 gauge thickness perforated sheets.</p> <p>g) Temp. Digital controller - Multispan brand. Temperature Range : 5°C to 60°C Temperatures Accuracy of Control : ± 0.50 Working Chamber Made of : Stainless Steel Sheet. Volume=285 Lt/ 10cft No. of Trays : 3 Numbers Perforated 304SS Trays of 18 gauge. Operable on : 220/230 Volts, Single Phase</p> <p>Proper white light illumination is necessary in inner chamber.</p>	
51	Thermometer,0deg C to 250 deg C	Thermometer,0degC to 250 deg C glass	2
52	Digital Thermometer	Temperature scale: deg C User-Selective Resolution: 1 °C Measurement Range: 0°C to 250°C Display: LCD	2
53	Gas oven	Design: Gas oven Colour: Silver Material: Stainless Steel Special Feature: Manual Ignition Heating Elements 2 burner Material: Top-quality stainless steel material with a glossy finish that ensures the durability and longevity of the product. Burners: Equipped with two high-efficiency brass burners (1 Big and 1 Small) that ensure uniform distribution of heat on the utensils. Heavy-duty Pan Supports - The pan supports are designed to accommodate all major sizes of pans as it is reliable and rigid in construction. Knobs: Ergonomic and safe-handling knobs not only offers beauty & safety but also grants easy and quick access to lit the stove.	2
54	Horizontal mechanical rotary shaker	Horizontal mechanical rotary shaker, 24" x24" Platform size with 304 SS of gauge, with Brushless induction motor, frequency drive to control, speed from 40 to 250 RPM and flask	1

Sl No	Items Name	Specification	Qty
		<p>holder made of SS ring in round shape with rubber base, digital rpm display controller. The shaker platforms made of 304 grade quality Stainless Steel 20 gauge are of easily replaceable type and can accommodate replaceable flask holder of 1000 ml, 500 ml, 250 ml, 100ml conical flasks.</p> <p>Supply with eight no of 1000 ml flask holder, twelve no of 500 ml of flask holder, fifteen no of 250 ml flask holder, ten no of 100ml conical flasks holder with ring.</p>	
55	Cooling BOD incubator shaker with variable orbital motion,	<p>Cooling BOD incubator shaker with variable orbital motion, combined high & low temperature – Inner chamber made of 304 grade quality Stainless Steel. Inner wall side 20-gauge thickness sheets & one stationary tray side 18-gauge thickness perforated sheets.</p> <p>Temperature range between 5°C to 60°C which will be controlled by means of a Digital Temperature Controller in conjunction with an electronic relay. Accuracy will be approximately $\pm 1^\circ\text{C}$.</p> <p>Specifications of shaking portion:</p> <p>Speed is adjustable between 50 and 250 rpm by means of a step less speed regulator. A digital RPM Meter is provided to indicate the shaking speed. The shaker platforms made of 304 grade quality Stainless Steel 20 gauge are of easily replaceable type and can accommodate 1000 ml, 500 ml, 250 ml, 100ml conical flasks. flask holder made of 304SS ring in round shape with rubber base.</p> <p>Technical Specifications: Temp. Digital controller - Multispan brand.</p> <p>Temperature Range : 5°C to 60°C Temperature Control : Temperature Controller by Digital.</p> <p>Accuracy of Control : $\pm 0.5^0$ to 1^0C</p> <p>Air Circulation : Provided with a smooth running continuous Blower fan to operate alternatively ensuring prolonged</p>	1

Sl No	Items Name	Specification	Qty
		<p>Operational life.</p> <p>Working Chamber Made of : Stainless Steel Sheet. Volume=28 5 Lt/ 10cft</p> <p>No of fixed Tray = one</p> <p>Shaking Speed : 50 to 250 RPM Speed Control & Indication : By a step less speed controller with <u>Digital RPM Display.</u></p> <p>Operable on : 220/230 Volts, Single Phase, AC Mains.</p> <p>Proper white light illumination is necessary in inner chamber.</p> <p>Supply with eight no of 1000 ml flask holder, twelve no of 500 ml of flask holder, twenty no of 250 ml flask holder, ten no of 100ml conical flasks holder with ring.</p>	
56	Horizontal Laminar air flow chamber , Size : 2' x 2' x 2'	<p>Horizontal Laminar air flow chamber</p> <p>STANDARD FEATURES :-</p> <ul style="list-style-type: none"> * Cabinet made from GI Powder Coated * Pre-Filter Assemblage for Multi-Dispose particle predominantly in the size range of 5- 20 microns. * HEPA Filter - 0.3 microns * Sealed white light * UV- light * Stainless Steel Work table * Front Door * Gas cock * Anti Vibration Leveling leg / Castor wheels * Extra power outlet switch * Size : 2' x 2' x 2' <p>TECHNICAL FEATURES :-</p> <p>AIR FLOW:</p> <ul style="list-style-type: none"> * Designed for 0.45m/s to 0.65 m/s when measure across the entire filters space during the rated life cycle of filters. <p>PRE-FILTERS:</p> <ul style="list-style-type: none"> * Size : 400 x 300x 50 - 1 no (2 feet unit) * Type : Flange type 	1

Sl No	Items Name	Specification	Qty
		<p>* Media : Synthetic, Non-oven Polyester fiber, Washable type * Casing : M.S. Powder coated * Gasket : Neoprene * Retention : 5 Micron * Efficiency : 95% * Pressure drop : 6 to 8 mm</p> <p>HEPA FILTER :- * Size : 610 x 610 x 75 mm - 1 no (2 feet unit) * Type : Box type, seperator type * Media : Ultra clean glass fibre paper-imported * Casing : M.S. Powder coated * Gasket : Neoprene * Retention : 0.3 Micron * Efficiency : 99.97% * Pressure drop : 25 mm of W.c.</p> <p>IMPELLERS: High performance noise abated statically and dynamically balanced.</p> <p>* Size: 10" x 8" twin impeller</p> <p>MOTOR -BLOWERS :- * Volts : 230 V * Hz : 50 * HP : 1/5 (2 - feet unit) * Amps : 3.5 * Watts : 250 * RPM : 1440 * Capacitor : 10 mfd * Max. temp : 80 Degree C * Weight : 4 kgs * Bearings : 2 Nos Ball Bearings, Both side shielded Lubricated for life * Over load protector : fitted * Qty : 1 no each</p> <p>PRESSURE GAUGE : * Housing : Die casting aluminium case and bezel, with acrylic cover * Accuracy : ± 2 % of full scale * Pressure limits : 15 psi * Temperature : 20 to 140 Degree F * Size : 4 " dia * Weight : 510 gram * Range : 0-25 mm</p> <p>HOUR METER : * Range : 9999 hrs * Weight : 75 gram * Size : 2" x 2"</p>	

Sl No	Items Name	Specification	Qty
		<p>CLEANLINESS LEVEL : * Class 100</p> <p>ILLUMINATION: * 40 watts Fluorescent tubes</p> <p>NOISE LEVEL : * 65 ± 5 db</p> <p>VIBRATION LEVEL : * less than 2.5 um (0.0001)</p> <p>POWER SUPPLY : * 230 v AC, 50Hz,</p> <p>STANDARDS:- * US FED STD 209 E * ISO 14644-1 * IEST- RP-CC-002-2 * BSI</p> <p>SPECIAL FEATURES : * HEPA Protecting grill * Motor winding Protector * DQ,IQ,PQ and OQ documents provided * Hour meter for monitoring UV life * Magnahelic gauge instead of manometer * Complete with door.</p>	
57	Muffle furnace, size of inner chamber (5''x 5''x 10'')inch	Muffle furnce, size of inner chamber (5''x 5''x 10'')inch, for 1000°C working, For 1000°C working 3.0KW. Outer body is of thick MS sheet painted in heat & rust proof silver ash hammertone / aluminum paint. Kanthal A-1 heating elements are used. Hot & Cold faced Kaynite Base insulating bricks provide the insulation. Temperature is controlled by digital indicator cum controller with suitable CR/AL Thermocouple. Works on 220 V, AC.	1
58	Visible Spectrophotometer	<p>Visible Spectrophotometer Specification: ~</p> <p>*Optical System: Single Beam, Grating 1200 lines / mm</p> <p>*Wavelength Range: 325 - 1000nm</p> <p>*Bandwidth: 2nm</p> <p>*Wavelength Accuracy: ±1nm</p> <p>*Wavelength Repeatability: ±0.5nm</p> <p>*Wavelength Setting: Auto</p> <p>*Photometric Accuracy: ±0.5%T</p> <p>*Photometric Repeatability: ±0.3%T</p>	1

Sl No	Items Name	Specification	Qty
		*Photometric Range: -0.3-3A, 0-200%T *Stray Light: <=0.3%T *Stability: ±0.002A/h @500nm *Display: LCD *Detector: Silicon Photodiode *Standard Cell Holder: 4-Position 50mm Cell Holder *Light Source: Tungsten Lamp *Output: USB Port & Parallel Port (Printer) *Power Supply: AC 220V/50Hz *Dimensions (L x W x H) : 420 x 280 x 180 (mm) Supply with Glass Cells: 4 Nos, Instrument cover: 1 Nos, Operational Manual: 1Nos	
59	Soxhlet apparatus with six chamber mantle type, flask capacity 500ml	Soxhlet apparatus with six chamber mantle type, flask capacity 500ml, 2 vertical, 2 horizontal rods with adaptor and screw to hold flask, six test heater of high quality nicrom wire with cotton cover including all soxhlet apparatus glass parts, RB flask of 500ml, extractor, condenser, silicon tube. Each heater made by high quality nicrom wire with cotton cover and thermostat-controlled arrangement with regulator. Supply with extra two set of RB flask of 500ml, extractor, condenser and Six numbers of Cytiva's Whatman 100% borosilicate glass microfiber (HP-GF) extraction thimbles suitable for extraction in Soxhlet apparatus.	1
60	Centrifuge 15ml capacity	Suitable for routine sample analysis in Medical, Hospital, Pathology and Institutional laboratories. With a wide choice of rotor heads and adaptors, this unit is truly versatile. Unit has digital speed indicator and 0–60-minute digital countdown timer. Salient Features : * Stepless speed regulator * Safety Lid interlock to prevent cover opening during centrifugation * Digital speed meter and 0-60 minutes digital countdown timer. Technical Data :-	1

Sl No	Items Name	Specification	Qty
		-Max speed : 5250 rpm -Max RCF : 3600 g -Max. capacity : 400 ml -WxDxH : 365x415x350mm Supply : 220-240 volts 50 Hz Single Phase. Complete with, R-81: 16 x 15 ML swing out head with graduated glass tubes of 15 ml.	
61	Hand Refractometer, with range 0-90% brix	Hand Refractometer metal made, with range 0-90% brix. Specification: "Washable". A special design concept for analog type measuring instruments. The readability of measured values is the "lifeline" for hand-held refractometer. Not only has the brightness of the entire field of view, but also the clarity of the boundaries represented the basis of the optical technology. Uses a smooth grip with no irregularities. The carbon-like design contributes to both cleanliness and playfulness. The measured value are automatically corrected according to the environment.	1
62	Hand Refractometer, with range 0-53% brix	Hand Refractometer metal made, with range 0-53% brix. Specification: "Washable". A special design concept for analog type measuring instruments. The readability of measured values is the "lifeline" for hand-held refractometer. Not only has the brightness of the entire field of view, but also the clarity of the boundaries represented the basis of the optical technology. Uses a smooth grip with no irregularities. The carbon-like design contributes to both cleanliness and playfulness. The measured value are automatically corrected according to the environment.	1
63	Hand Refractometer, with range 30-80% brix	Hand Refractometer metal made, with range 30-80% brix. Specification: "Washable". A special design concept for analog type measuring instruments.	1

Sl No	Items Name	Specification	Qty
		<p>The readability of measured values is the "lifeline" for hand-held refractometer. Not only has the brightness of the entire field of view, but also the clarity of the boundaries represented the basis of the optical technology. Uses a smooth grip with no irregularities. The carbon-like design contributes to both cleanliness and playfulness. The measured values are automatically corrected according to the environment.</p>	
64	Binocular microscope	<p><u>BINOCULAR MICROSCOPE</u> Standard set complete with in-built 6V 20W halogen light illuminator, with Anti-Fungus Achromatic Objectives iNEA achromat 4x, 10x, 40x (spring) and 100x (oil, spring), paired eyepieces wide field iCWHK10x in thermocole packing.</p> <p>Special Features:</p> <p>Anti-Fungus optics (with sealed optical parts), inter changeability of Objectives, the abbe condenser & the light relay system fitted with high performance aspheric lenses for bright & crisp image, Window in arm & the Ergonomic design, illumination system through SMPS circuit etc. & many more. Optimaization of illumination with aspheric lenses, Choice of halogen, LED illumination and Battery backup. Product has ISO 9001:2008, CE, ISO 13485:2003 Certification.</p>	1
65	Tray dryer, horizontal cross air flow system	<p>Tray dryer: cross air flow system, inner 304SS AISI wall of 20 gauge & with 12 number of 304SS AISI tray of 16 gauge, Tray size : (12''x18''x1'')inch. All trays adjustable type with gap of 5'' per tray. Twelve (12) number of tray consist of 4 wire net, 4 perforated and 4 solid tray. Arrangement of tray in two column in two side of double door chamber with ball catchup system.</p> <p>Two side heating elements, Standard double wall fabrication, Glass wool insulation. Inner chamber made of highly polished 304 stainless steel sheet, Exterior fabricated out of thick 16-gauge mild steel duly finished in white stoving enamel with mat finished color combinations, ball catcher heavy door. Quick and uniform heating in range of 50°C to 250°C ±1°C accuracy, Control panel is provided with digital temp (SELEC/Multispan) and time controller (SELEC/Multispan) cum indicator with panel.</p>	1

Sl No	Items Name	Specification	Qty
		<p>1HP Crompton brand motor with fittings of 304SS made blower type circulating fan. Heating load of 4kw. Operate on 230-volt AC</p> <p>Supply with extra 6 nos. wire net 304SS tray and 6 nos. perforated 304SS tray and 6 nos of 304SS solid tray.</p>	
66	Potato peeler, abrasions method	Potato peeler, abrasions method, laboratory model, ½ HP Compton motor operated, totally made of AISI Stainless Steel 304 Quality of 20gauge	1
67	Mixer grinder	Mixer grinder, 600 watt. Any reputed branded made	2
68	Potato Slicer, hand operated laboratory	<p>Potato Slicer, hand operated laboratory model</p> <p>With thickness adjustment system, totally made of AISI Stainless Steel 304 Quality of 20gauge fitted with iron stand.</p>	1
69	SS stand Cutting table, size 5'x3'	304 SS solid stand Cutting table, size 5'x3', having SS304 of 14-gauge top and bottom cover, height 2.5ft, all legs made by SS tube.	1
70	Potato Slicer, ½ HP motor operated	Potato Slicer, ½ HP Compton motor operated laboratory model With thickness adjustment system, totally made of AISI Stainless Steel 304 Quality of 20gauge.	1
71	Screw type juice extractor	Screw type juice extractor, made 304SS laboratory model, ½ HP motor operated Compton make, fixed in a base.	1
72	Vegetable Slicer, hand operated laboratory model	Vegetable Slicer, ½ HP Compton motor operated laboratory model with thickness adjustment system, totally made of AISI Stainless Steel 304 Quality of 20gauge.	1
73	Single pulper machine	Small size motorized single pulper machine for extraction of guava pulp Compton Motor 1 HP. Coming with rough and fine perforated mesh filter. Contact SS304. Volts 230 volts.	1
74	Fruit crusher or fruit miller	Fruit crusher or fruit miller for crushing of pineapple, tomato. Contact SS 304. Compton Motor 1HP. Volt 230 volts.	1

Marks Distribution

Outcome	Outcome	Total Th marks	Total Pr marks	Total OJT marks
Ensure performance, efficiency and maintenance of laboratory equipment and tools for food lab testing with proper hygiene and safety.	FPT/1116/OC1	30	140	0
Analyze food product quality and maintain GMP as per the specifications and standards of the Food analysis and quality control laboratory.	FPT/1116/OC2	30	170	0
Perform Sampling, Analysis and Quality control of food materials as per the specifications and standards of the FSSAI organization.	FPT/1116/OC3	50	160	0
Maintain records on sampling and analysis of raw materials, packaging materials, finished products, market sample, equipment calibration and regulatory requirements for different food lab activities	FPT/1116/OC4	20	90	0
Maintain food safety standard, hygiene and sanitation in laboratory work area and food processing unit	FPT/1116/OC5	20	90	0
Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	FPT/1116/OC6	0	0	150
Employability Skills – 60 Hrs	DGT/VSQ/N0102	50	0	0