FRUITS AND VEGETABLES PROCESSING

NSQF LEVEL- 4

SECTOR- FOOD INDUSTRY

COMPETENCY BASED CURRICULUM

CRAFT INSTRUCTOR TRAINING SCHEME (CITS)

GOVERNMENT OF INDIA
Ministry of Skill Development & Entrepreneurship
Directorate General of Training
CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE
EN-81, Sector-V, Salt Lake City, Kolkata – 700091

FRUITSAND VEGETABLES PROCESSING

(Non-Engineering Trade)

SECTOR – FOOD INDUSTRY

(Revised in 2024)

Version 2.1

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Developed By

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CONTENTS

1. COURSE OVERVIEW

The Craft Instructor Training Scheme is operational since inception of the Craftsmen Training Scheme. The first Craft Instructors' Training Institute was established in 1948. Subsequently, 6 more institutes namely, Central Training Institute for Instructors (now called as National Skill Training Institute (NSTI), NSTI at Ludhiana, Kanpur, Howrah, Mumbai, Chennai and Hyderabad were established in 1960's by DGT. Since then the CITS course is successfully running in all the NSTIs across India as well as in DGT affiliated institutes viz. Institutes for Training of Trainers (IToT). This is a competencybased course of one year duration. "Fruit and Vegetable Processing" CITS trade is applicable for Instructors of "Fruit and Vegetable Processing" CTS Trade only.

The main objective of Craft Instructor training programme is to enable Instructors explore different aspects of the techniques in pedagogy and transferring of hands-on skills so as to develop a pool of skilled manpower for industries, also leading to their career growth & benefiting society at large. Thus promoting a holistic learning experience where trainee acquires specialized knowledge, skills & develops attitude towards learning & contributing in vocational training ecosystem.

This course also enables the instructors to develop instructional skills for mentoring the trainees, engaging all trainees in learning process and managing effective utilization of resources. It emphasizes on the importance of collaborative learning & innovative ways of doing things. All trainees will be able to understand and interpret the course content in right perspective, so that they are engaged in & empowered by their learning experiences and above all, ensure quality delivery.

2. TRAINING SYSTEM

2.1 GENERAL

CITS courses are delivered in National Skill Training Institutes (NSTIs) & DGT affiliated institutes viz., Institutes for Training of Trainers (IToT). For detailed guidelines regarding admission on CITS, instructions issued by DGT from time to time are to be observed. Further complete admission details are made available on NIMI web portal http://www.nimionlineadmission.in. The course is of one-year duration. It consists of Trade Technology (Professional skills and Professional knowledge), Training Methodology and Engineering Technology/ Soft skills. After successful completion of the training programme, the trainees appear in All India Trade Test for Craft Instructor. The successful trainee is awarded NCIC certificate by DGT.

2.2 COURSE STRUCTURE

Table below depicts the distribution of training hours across various course elements during a period of one year:

S No.	Course Element	Notional Training Hours
1.	**Trade Technology**	
	Professional Skill (Trade Practical)	480
	Professional Knowledge (Trade Theory)	270
2.	**Training Methodology**	
	TM Practical	270
	TM Theory	180
	Total	**1200**

Every year 150 hours of mandatory OJT (On the Job Training) at nearby industry, wherever not available then group project is mandatory.

3	On the Job Training (OJT)/ Group Project	150
4	Optional Courses	240

Trainees can also opt for optional courses of 240 hours duration.

2.3 PROGRESSION PATHWAYS

- Can join as anInstructor in vocational training Institute/ technical Institute.
- Can join as a supervisor in Industries.

2.4 ASSESSMENT & CERTIFICATION

The CITS trainee will be assessed for his/her Instructional skills, knowledge and attitude towards learning throughout the course span and also at the end of the training program.

a) The Continuous Assessment(Internal) during the period of training will be done by **Formative Assessment Method** to test competency of instructor with respect to assessment criteria set against each learning outcomes. The training institute has to maintain an individual trainee portfolio in line with assessment guidelines. The marks of internal assessment will be as per the formative assessment template provided on www.bharatskills.gov.in

b) The **Final Assessment** will be in the form of **Summative Assessment Method**. The All India Trade Test for awarding National Craft Instructor Certificate will be conducted by NCVT as per the guidelines of DGT.The learning outcome and assessment criteria will be the basis for setting question papers for final assessment**.** The external examiner during final examination will also check the individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

2.4.1 PASS CRITERIA

Allotment of Marks among the subjects for Examination:
The minimum pass percent for Trade Practical, TM Practical, Soft Skill Practical Examinations and Formative assessment is 60% & for all other subjects is 40%. There will be no Grace marks.

2.4.2 ASSESSMENT GUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking the assessment.While assessing; the major factors to be considered are approaches to generate solutions to specific problems by involving standard/non-standard practices.

Due consideration should also be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scrap/waste as per procedure, behavioral attitude, sensitivity to the environment and regularity in training. The sensitivity towards OSHE and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based comprising of the following:

- Demonstration of Instructional Skills

(Lesson Plan, Demonstration Plan)

- Record book/daily diary
- Assessment Sheet
- Progress chart
- Video Recording
- Attendance and punctuality
- Viva-voce
- Practical work done/Models
- Assignments
- Project work

Evidences and records of internal (Formative) assessments are to be preserved until forthcoming examination for audit and verification by examining body. The following marking pattern to be adopted while assessing:

Performance Level	Evidence
(a) Weightage in the range of 60%-75% to be allotted during assessment	
For performance in this grade, the candidate should be well versed with instructional design, implement learning programme and assess learners which demonstrates attainment of an **acceptable standard** of crafts instructorship with **occasional guidance** and engage students by demonstrating good attributes of a trainer.	• Demonstration of **fairly good** skill to establish a rapport with audience, presentation in orderly manner and establish as an expert in the field. • Average engagement of students for learning and achievement of goals while undertaking the training on specific topic. • A fairly good level of competency in expressing each concept in terms the student can relate, draw analogy and summarize the entire lesson. • Occasional support in imparting effective training.
(b) Weightage in the range of 75%-90% to be allotted during assessment	
For performance in this grade, the candidate should be well versed with instructional design, implement learning programme and assess learners which demonstrates attainment of a**reasonable standard** of crafts instructorship with **little guidance** and engage students by demonstrating good attributes of a trainer.	• Demonstration of **good** skill to establish a rapport with audience, presentation in orderly manner and establish as an expert in the field. • Above average engagement of students for learning and achievement of goals while undertaking the training on specific topic. • A**good** level of competency in

	expressing each concept in terms the student can relate, draw analogy and summarize the entire lesson. ● Little support in imparting effective training.
©Weightage in the range of more than 90% to be allotted during assessment	
For performance in this grade, the candidate should be well versed with instructional design, implement learning programme and assess learners which demonstrates attainment of a**high standard** of crafts instructorship with **minimal or no support** and engage students by demonstrating good attributes of a trainer.	● Demonstration of **high** skill level to establish a rapport with audience, presentation in orderly manner and establish as an expert in the field. ● Goodengagement of students for learning and achievement of goals while undertaking the training on specific topic. ● A **high** level of competency in expressing each concept in terms the student can relate, draw analogy and summarize the entire lesson. ● Minimal or no support in imparting effective training.

3. GENERAL INFORMATION

Name of the Trade	**Fruits And Vegetables Processing (CITS)**
Trade Code	DGT/4032
NCO – 2015	2356.0100, 7514.9900, 7515.9900
NOS Covered	FIC/N9448, FIC/N9441, FIC/N9450, FIC/N9451, FIC/N9449, FIC/N9452, MEP/N9446
NSQF Level	Level-4
Duration of Craft Instructor Training	One Year
Unit Strength (No. Of Student)	25
Entry Qualification	Degree in Food Technology/ Food Engineering/Food processing/ Post Harvest Management from recognized Board / University. OR 03 years Diploma in Food Technology/ Food Engineering/Food processing/ Post Harvest Management after class 10th from recognized board/ University. OR Ex-serviceman from Indian Armed forces with 15 years of service in related field as per equivalency through DGR OR 10th Class with 01year NTC/NAC passed in the Fruits and Vegetables Processing trade
Minimum Age	16 years as on first day of academic session
Space Norms	Lab Space - 120 Sq. m Quality lab- 40 Sq. m
Power Norms	6 KW
Instructor's Qualification for	
1. Fruits and Vegetables Processing (CITS) Trade	B.Voc/ Degree in Food Technology/Food Engineering/Food processing/ Post harvest management from AICTE/ UGC recognized University with two years experience in relevant field. OR Diploma (Minimum 2 Years) in Food Technology/Food Engineering/Food processing/ Post harvest management from recognized University /Board. OR

	Ex-serviceman from Indian Armed forces with 15 years of service in related field as per equivalency through DGR. Candidate should have undergone methods of instruct ion course or minimum 02 years of experience in technical training institute of Indian Armed forces OR NTC/ NAC passed in Fruits and Vegetables Processing trade with seven years experience in relevant field. **Essential Qualification:** National Craft Instructor Certificate (NCIC) inFruits and Vegetables Processing trade, in any of the variants under DGT.
2. Soft skills	MBA/ BBA / Any Graduate/ Diploma in any discipline from AICTE/ UGC recognized College/ university with Three years' experience and short term ToT Course in Soft Skills from DGT institutes. (Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above).
3. Training Methodology	B.Voc/ Degree in any discipline from AICTE/ UGC recognized College/ university with two years experience in training/ teaching field. OR Diploma in any discipline from recognized board / University with five years experience in training/teaching field. OR NTC/ NAC passed in any trade with seven years experience in training/ teaching field. Essential Qualification: National Craft Instructor Certificate (NCIC) in any of the variants under DGT / B.Ed /ToT from NITTTR or equivalent.
4. Minimum Age for Instructor	21 Years

4. JOB ROLE

Brief Description of Job Roles:

Fruits and Vegetables processing Instructor is able to impart training and supervise the production, quality control, Cold storage, Packaging section in fruits and vegetables processing pilot plant. Instructor is able to handle the fruits and vegetables processing machines/tools/ equipment during the preparation of Fruits and vegetables products such as Fruit beverage, Jam/ jelly, Tomato Products, Dried products, Preserves/ candies, Pickles etc. Fruits and Vegetables processing Instructor is also able to impart training on food safety standards.

- Quality Analyst in Fruit and vegetable processing industry
- Supervisor in Fruits and Vegetable Processing Industry
- Cold Storage Supervisor in Frozen fruits and vegetables industry
- Packaging Supervisor in Fruits and Vegetable Processing industry
- Skilled worker in Food MNCs
- Small Entrepreneur in Fruits and Vegetables processing.

Manual Training Teacher/Craft Instructor; instructs students in ITIs/Vocational Training Institutes in respective trades as per defined job role. Imparts theoretical instructions for the use of tools & equipment's of related trades and related subjects. Demonstrate process and operations related to the trade in the workshop; supervises, assesses and evaluates students in their practical work. Ensures availability & proper functioning of equipment and tools in stores.

Fruit and Vegetable Preservers, Other; perform variety of routine tasks in canning and preserving food, fruits and vegetables not elsewhere classified, and may be designated according to nature of work performed such as: Peeler Hand peels skin of fruits and vegetables using hand knife. Grader examines, classifies and separates fruits, vegetables and fish according to size, quality, colour, condition or species. Washer tends machine that washes raw fruits or vegetables preparatory to canning, freezing or packing. Feeder Charger feeds machine with fruits or vegetables by hand for washing, shelling, shredding, cooking and pulping.

Food and Beverages Tasters and Graders, Other; include workers who inspect, taste and grade various types of agricultural products, food and beverages not elsewhere classified.

Reference NCO 2015:

a) 2356.0100-Manual Training Teacher/Craft Instructor
b) 7514.9900- Fruits, Vegetables and Related Preservers, Others
c) 7515.9900- Food and Beverage Tasters and Graders, Other

Reference NOS:

i) NOS: FIC/N9448
ii) NOS: FIC/N9441
iii) NOS: FIC/N9450
iv) NOS: FIC/N9451
v) NOS: FIC/N9449
vi) NOS: FIC/N9452
vii) NOS: MEP/N9446

5. LEARNING OUTCOMES

Learning outcomes are a reflection of total competencies of a trainee and assessment will be carried out as per the assessment criteria.

5.1 TRADE TECHNOLOGY

1. Explain scope of fruits & vegetables industry and demonstrate selection of fresh fruits & vegetables prior to processing. (NOS: FIC/N9448)
2. Explain causes of decay, various microbes causing decay viz. bacteria, yeast, mould etc. and remedies to reduce spoilages in fruits and vegetables. (NOS: FIC/N9448)
3. Evaluate the degree of Brix (TSS), pH, acidity, presence of chemicals & contamination and estimate reducing & non reducing sugars in fruits and vegetables as per the food safety standard. (NOS: FIC/N9441)
4. Demonstrate storage and conditions to maintain refrigeration with safety precautions. (NOS: FIC/N9449)
5. Demonstrate the preparation of fruit juices and other beverages using machines with safety precautions and addition of preservatives. (NOS: FIC/N9449)
6. Evaluate preparation and preservation of the Tomato juices, puree, sauces, ketchup etc. by using appropriate machines with safety precautions. (NOS: FIC/N9450)
7. Evaluate preparation and preservation of the jam, jelly and marmalades by using appropriate machines with safety precautions. (NOS: FIC/N9450)
8. Assess preparation of preserves (murabba), candy, crystallized and fruit bar by using appropriate machines such as solar drier, cabinet drier etc as per food safety standard. (NOS: FIC/N9451)
9. Evaluate preparation of fruits/vegetables pickles with oil, salt, vinegar and spices, determine acidity content as per food safety standards. (NOS: FIC/N9451)
10. Demonstrate drying and storage of seasonal fruits & vegetable with appropriate methods of drying and dehydration. (NOS: FIC/N9449)
11. Demonstrate operation of Bottling, can fillers, form fills, seal machines and examination of tetra packs with safety precaution. (NOS: FIC/N9452)
12. Illustrate the canning operation of fruits and vegetables by using appropriate machines with safety measures. (NOS: FIC/N9452)
13. Exhibit effective communication skills with logical reasoning ability and quantitative aptitude to maximize efficiency in work. (NOS: MEP/N9446)

6. COURSE CONTENT

SYLLABUS FOR FRUITS AND VEGETABLES PROCESSING (CITS)			
TRADE TECHNOLOGY			
Duration	**Reference Learning Outcome**	**Professional Skills (Trade Practical)**	**Professional Knowledge (Trade Theory)**
Practical 20 Hrs. Theory 10 Hrs.	Explain scope of fruits & vegetables industry and demonstrate selection of fresh fruits & vegetables prior to processing.	1. Quality evaluation of fruits and vegetables. 2. Quantitative analysis of cut fruits and vegetable yield. 3. Determination of Maturity indices of fruits & vegetables.	• Status and scope of fruits and vegetable industry in India. • Definition of Acids, Alkalis, solutions, Titration, pH and salts, their properties etc. • Composition and nutritive value of fruits and vegetable. • Factor effecting composition and quality of fruits and vegetables. • Importance of fruits & Vegetables in the diet. • Effects of pre-treatment on quality of cut fruits and vegetables.
Practical 20 Hrs. Theory 10 Hrs.	Explain causes of decay, various microbes causing decay viz. bacteria, yeast, mould etc. and remedies to reduce spoilages in fruits and vegetables.	**Demonstrate Causes of decay/spoilage in fruits/ vegetables:** 4. Check for Bacteria, Yeast and mould under microscope. 5. Prepare and transfer culture media. 6. Prepare slides and use of simple strains. 7. Familiarize with laboratory equipment's. 8. Prepare and verify normality of standard solutions.	• Study of compound Microscope. • Study of bacteria, yeast and mould. • Different types of spoilages in fruits and vegetables. • Spoilage during storage of fruits and vegetables and their prevention. • General methods of preservation of whole fruits/vegetables and processed fruits and vegetables. • Definition of Acids, Alkalis, solutions, Titration, pH and salts, their properties etc.
Practical	Evaluate the degree of	**Determine presence of**	• Study of Food safety

40 Hrs. Theory 20 Hrs.	Brix (TSS), pH, acidity, presence of chemicals &contamination and estimate reducing &non reducing sugars in fruits and vegetables as per the food safety standard.	**chemicals as per food safety standards:** 9. Determine Degree Brix (TSS), pH and % acidity in fruits and vegetable products. 10. Estimate benzoic acid, sulphur dioxide and KMS in terms of ppm present in fruits and vegetable products. 11. Estimate reducing and non reducing sugars in fruit and vegetable products. 12. Apply food safety management system (FSMS) like GHP, GMP, HACCP, etc. in fruit & vegetable processing industry.	Standards: ● HACCP and its benefits and application, ISO22000. ● International food laws and regulatory agencies: ● International Organizations – FAO (Food & Agriculture Organization), WHO (World Health Organization),Codex ● Alimentarius, ISO, WTO. ● National Organizations – ICMR, ICAR, Council for social welfare, International Food Control Systems including CODEX. ● Importance of personal Hygiene, Cleaning & Sanitary standards in Fruits and Vegetable processing industry. ● Good Handling Processes (GHP). ● Traceability aspects of processed product, Forward and backward traceability. ● Registration process for 'FOSTAC' from FSSAI recognized training certification agencies.
Practical 40 Hrs. Theory 20 Hrs.	Demonstrate storage and conditions to maintain refrigeration with safety precautions.	**Refrigeration and storage of fruits and vegetables:** 13. Maintain the right temperature for refrigeration of perishable fruits and vegetables. 14. Store fruits and vegetables in wrapped containers to avoid moisture loss and absorption of odors. 15. Blanching test for peroxidase activity.	● General methods of preservation of whole fruits/vegetables such as Refrigeration and cold storage. ● Freezing principles and its methods, freezing process of fruits and vegetables. ● Preparation of fruits/ vegetables for freezing, Different method of

		16. Physical, chemical and microbiological testing of frozen fruits and vegetables.	freezing peas, potato cubes, cauliflower, sprout. • Freezing point of different fruits and vegetables. • Physical and chemical changes during freezing. • Proper Methods of packaging of frozen fruits and vegetables.
Practical 45 Hrs. Theory 15 Hrs.	Demonstrate the preparation of fruit juices and other beverages using machines with safety precautions and addition of preservatives.	**Extraction of juice by different methods:** 17. Preservation of fruits juices with addition of preservative. 18. Determination of Degree Brix (TSS), pH and % acidity in fruit juices. 19. Operate food processing equipments such as juice extracting machines, autoclaves, corking machines etc. 20. Use Instruments such as refractometer, Hydrometers, electronic weighing balance.	• Technology of extraction of juices from different types of fruits. • Definition of Preservatives, types of preservatives commonly used in Fruits and vegetables processing industry, limits of usage of preservatives. • Study of equipment: usage, cleaning methods, care/maintenance and precautions. • Other Fruit beverages: Squashes, syrups, nectars, RTS, crushes, cordial etc.
Practical 40 Hrs. Theory 20 Hrs.	Evaluate preparation and preservation of the Tomato juices, puree, sauces, ketchup etc. by using appropriate machines with safety precautions.	**Prepare tomato- juices, puree, sauces, ketchups, soup, paste, etc:** 21. Demonstrate preparation of tomato juices, puree, sauces, ketchups, soup, paste, etc. 22. End point determination in preparation of tomato-juices, puree, sauces, ketchups, soup, paste, etc. 23. Demonstrate preparation ofchutney. 24. Compare juice/pulp extraction methods on quality and yield of tomato pulp. 25. Determine Degree Brix (TSS)	• Tomato products: Manufacturing process of tomato based products like tomato juice, soup, puree, sauce, ketchup, and paste. • Spoilage of tomato products and their preventive measure. • Definition of chutney. • Study of equipment: usage, cleaning methods, care/maintenance and precautions.

		and % acidity of Tomato products.	
Practical 55 Hrs. Theory 20 Hrs.	Evaluate preparation and preservation of the jam, jelly and marmalades by using appropriate machines with safety precautions.	**Prepare jam, jelly and marmalades:** 26. Demonstrate preparation of jam, jelly and marmalades. 27. End point determination in preparation of high sugar content product. 28. Determination of Degree Brix (TSS), pectin test and % acidity of jam, jelly and marmalades. 29. Handling and operating of food processing equipment's such as Pulper, autoclaves, sealer and corking machines etc. 30. Use instruments such as refractometer, Hydrometers, jelmeter, thermometer, and electronic weighing balance.	• Jams, Jellies and marmalades: selection, preparation, production and preservation. • Difference between jam and jelly. • Theory of jelly formation, failure and remedies in jam and jelly making. • Study of equipment: usage, cleaning methods, care/maintenance and precautions.
Practical 45 Hrs. Theory 15 Hrs.	Assess preparation of preserves (murabba), candy, crystallized and fruit bar by using appropriate machines such as solar drier, cabinet drier etc as per standard.	**Prepare preserves(murabba), candies, crystallized and glazed fruits and fruit bars**: 31. Demonstrate preparation of preserves(murabba), candies, crystallized and glazed fruits and fruit bars. 32. End point determination in preparation of high sugar content product. 33. Determine Degree Brix (TSS) of preserves (murabba). 34. Handling and operating of food processing equipment's such as solar drier, cabinet drier, Hot air oven and autoclaves etc. 35. Use of Instruments such as refractometer, Hydrometers, thermometer and electronic weighing balance.	• General principles and manufacturing processes of preserves, candied fruits, glazed fruits, crystallized fruits. • Study of equipment: usage, cleaning methods, care/maintenance and precautions. • Effects of pre-treatment and process variables on quality of preserve and candied fruits.
Practical 45 Hrs.	Evaluate preparation of fruits/vegetables	**Prepare sauerkraut, gherkins, cauliflower, lime, mango and**	• Definition of Pickles. • Raw materials for

Theory 15 Hrs.	pickles with oil, salt, vinegar and spices, determine acidity content as per food safety standards.	**mixed pickles:** 36. Demonstrate preparation of sauerkraut, gherkins, cauliflower, lime, mango and mixed pickles. 37. Handling and operating of food processing equipment's such as slicer and Rotary pickle mixer etc. 38. Instruments such as Salinometer, Hydrometers and electronic weighing.	preparation of pickles and pickling process. • Spoilage of pickle. • Methods of preparation, curing techniques, defects and remedies in pickle. • Study of equipment: usage, cleaning methods, care/maintenance and precautions.
Practical 45 Hrs. Theory 15 Hrs.	Demonstrate drying and storage of seasonal fruits & vegetables with appropriate methods of drying and dehydration.	**Drying and dehydration of seasonal fruits and vegetables:** 39. Demonstrate Dehydration and rehydration of common available fruits/vegetables. 40. Different methods of peeling and evaluation of their effectiveness. 41. Demonstrate Different methods of blanching. 42. Determination of blanching time. 43. Handling and operating of food processing equipment's such as Solar dryer, Cabinet Dryer and Hot air Oven.	• Dehydrated products, Dried Fruits/vegetables slices and dices, Preparation of product for dehydration, Dehydration principles and equipments used for drying. • Spoilage of dehydrated fruits and vegetables. • Sun drying & dehydration and its merits and demerits. • Pre-treatment in drying process. • Effect of dehydration on nutritive value, Packaging of dried Fruits/Vegetables, dried slice and dices. • Principles, merits and limitations of freeze drying.
Practical 45 Hrs. Theory 15 Hrs.	Demonstrate operation of Bottling, can fillers, form fills, seal machines and examination of tetra packs with safety precautions.	44. Practical demonstration of Bottling, canning& form fills and seal machines. 45. Handling and operating Bottle filling machine, Can filler, form fills and seal machines. 46. Formation and examination of cans. 47. Cleaning and maintenance of the equipments for Bottling,	• Packaging and function of packaging. • Types of packaging materials e.g. paper, glass, metal, plastic. • Packaging requirements and their selection for various process e.g. canning, dehydration etc. • Study of various types of containers like Glass, Tin,

		canning and form fills and seal machines. 48. Examination of the tetra pack. 49. Demonstration of packaging evaluations. 50. Evaluate strength viz. bursting, tensile, tearing and drop test of packaging materials.	Tetra pack, PET bottle: merits and demerits. • Labelling type and its importance, Function and regulations of package labelling. • Packaging evaluation for WVTR, GTR, Bursting strength, tensile strength, tearing strength, drop test.
Practical 40 Hrs. Theory 20 Hrs.	Illustrate the canning operation of fruits and vegetables by using appropriate machines with safety measures.	51. Demonstrate Canning of peaches, apple, strawberries, cherries, pears, plum and pineapple, peas, tomato, corn, spinach, green beans etc. 52. Cut out analysis. 53. Identification of different lacquers and defects in cans. 54. Testing of brine and syrups. 55. Examination of canned food. 56. Determination of iron content in canned foods. 57. Analysis of canned and processed products available in the market. 58. Visit to canning industry.	• General principle of fruits and vegetables canning, type of cans, Types of lacquer. • Lacquering precautions in canning operations. • Equipment for canning. • Unit operation in canning of fruits and vegetables. • Preparations of syrup and brines, Spoilage of canned foods, discolorations and corrosion. • Defects in canned products and lacquers. • Utilization of By-products of fruits and vegetable industry.
SOFT SKILLS: 75 Hrs.			
Theory Soft Skills- 75 Hrs.	Exhibit effective communication skills with logical reasoning ability and quantitative aptitude to maximize efficiency in work.	**COMMUNICATION SKILLS:** Oral communication Skills, Voice, accent, Voice modulation, pace, Intonation, etc. Study of different pictorial expressions of non-verbal communication and its analysis. Demo on Strengths and Weaknesses Demo on Motivation, Positive attitude. Practice on personal appearance, Dressing Manners & Etiquettes. Practice on attending of mock interview of different types. Listening & doubt clarifying etc. Case studies on Interview sessions. **Communication & Listening Skills** Components of effective communication, Types of communication- Oral, Written, Reading & body language, Handling of communication, Barriers of	

		communication, Listening Tools & Speaking Tools, Non-verbal communication and its importance. **Self-Management& Personality Development** Self-Management, SWOT analysis, self-learning and management. Motivation and Image building Techniques **Personal Grooming & Hygiene** Presentation of Self, Formal & Informal Dressing, Dressing for Occasions. **Techniques of Attending Interviews** Interview & its types. Preparation for the interview, stages of interview. Do's & Don'ts in an interview. **BASIC MATHEMATICAL CALCULATION:** Conversions of different units viz. length, area, mass etc. Simple Problems on Perimeter and area of a triangle, a circle, a square, rectangle, semicircle etc. Simple Problems on Comparing quantities, weight, speed, height, age, ratio, percentage, and price, etc. Simple calculation on profit and loss statement, discount calculations of products. Demonstration of utilization of mobile apps for financial transactions. Exercises on aptitude/puzzles Practice on Types of Charts and Graphs Introduction to units and dimensions of different objects. Perimeter, Area of regular shapes, viz. Triangle, Square, and Circle, rectangle, semicircle etc. **Quantitative Aptitude** Introduction, Comparing quantities viz. Speed, age, height, ratio, percentage, weight, and price, etc. Introduction to cost price, sale price, profit, loss and discounts of products. Introduction to online internet banking mechanisms, various modes of payments, cash transactions and associated mobile apps. Concept of insurance and taxes and types. Personal saving and investment mechanism. **Logical reasoning** Introduction to logical reasoning. Types of logical reasoning. Principles of logical reasoning with examples on numbers and sequences, arrangement and relations, **Data Interpretation** Data analysis and interpretation. Types of variables for different applications. Basic graph types (Bar, Line, PIE Charts). **ENERGY & ENVIRONMENT:** Video demo on different types of energy resources. Conventional & Non-Conventional Energy Resources. Fossil Fuel, Biomass, Bio-Gas, Solar, etc. Public awareness on Energy conservation and use of clean energy. **ENGLISH LITERACY:** Pronunciation of simple words, Diction (use of word and speech) Transformation of sentences, Spellings. Reading and understanding simple sentences about self, work and environment. Construction of simple sentences Writing simple

		English, Speaking with preparation on self, on family, on friends/ classmates, on work. Role-playing and discussions on current affairs. Job description. Practice of Taking messages, passing on instructions. Practice making Resumes or curriculum vita. Letters of application &referencing to previous communication.

SYLLABUS FOR CORE SKILLS	
1.	Training Methodology (Common for all trades) (270Hrs. + 180Hrs.)

Learning outcomes, assessment criteria, syllabus and Tool List of above Core Skills subjects which is common for a group of trades, provided separately in www.bharatskills.gov.in

7. ASSESSMENT CRITERIA

LEARNING OUTCOME	ASSESSMENT CRITERIA
TRADE TECHNOLOGY (TT)	
1. Explain scope of fruits & vegetables industry and demonstrate selection of fresh fruits & vegetables prior to processing. (NOS: FIC/N9448)	Select fruits and vegetables.
	Demonstrate selection criteria check list for fruits and vegetables.
	Choose fresh fruits and vegetables.
	Determine the maturity indices of fruits and Vegetables.
	Evaluate the quantitative analysis of cut fruits and vegetables yield.
	Explain the factors effecting composition and quality of fruits and vegetables.
2. Explain causes of decay, various microbes causing decay viz. bacteria, yeast, mould etc. and remedies to reduce spoilages in fruits and vegetables. (NOS: FIC/N9448)	Examine the spoiled fruits and vegetables and their products.
	Inspect and record the cause of spoilage.
	Explain general principle and methods of food preservations.
	Demonstrate the required laboratory equipment.
	Demonstrate preparation and verify the normality of standard solutions.
	Demonstrate preparation and Transfer of culture media.
	Examine the identification of bacterial, yeast and mould under the microscope.
3. Evaluate the degree of Brix (TSS), pH, acidity, presence of chemicals & contamination and estimate reducing & non reducing sugars in fruits and vegetables as per the food safety standard. (NOS: FIC/N9441)	Ensure Maintenance of the perfect standard of hygiene.
	Estimate the alcohol content, TSS, pH, and Sensory evaluation.
	Demonstrate the carbonation process for the Addition of carbon-dioxide gas.
	Estimate the presence of benzoic acid, sulphur dioxide and KMS in terms of ppm present in fruits and vegetable products.
	Explain the Food Safety Standards followed in Fruits and vegetables industry.
4. Demonstrate storage and conditions to maintain refrigeration with safety precautions.(NOS: FIC/N9449)	Demonstrate the Preparation of fruits/vegetables for Refrigeration.
	Demonstrate the requiredtemperature for refrigeration depending on freezing principles and methods.
	Demonstrate the methods of Storage of fruits/vegetables under refrigerated condition.
	Explain blanching and freezing of fruits/vegetables.
	Estimate the physical parameter of a sample of frozen fruits/vegetables and enter data in record sheet.
	Demonstrate the preparation of solution for blanching test.

	Determine the peroxidase activity in frozen vegetable market sample.
	Examine the microbiological parameter of sample of frozen fruits/vegetables and enter data in record sheet.
	Ensure maintenance of perfect standard of hygiene.
5. Demonstrate the preparation of fruit juices and other beverages using machines with safety precautions and addition of preservatives.(NOS: FIC/N9449)	Ensure maintenance of perfect standard of hygiene.
	Select perfect fruits prior to processing of juice making.
	Demonstrate the Preparation of fruits for juice extraction.
	Explain the Washing & cleaning procedure of the fruits.
	Demonstrate the extraction of fruits juice.
	Examine the measurement of juice.
	Determine TSS.
	Determine acidity and limit of preservatives to be used.
	Illustrate the Filling of preserved fruit juices in sterilized bottles.
	Demonstrate the corking and crown the bottles.
	Demonstrate the Sterilization of the bottles.
	Demonstrate the Labelling process.
6. Evaluate preparation and preservation of the Tomato juices, puree, sauces, ketchup etc. by using appropriate machines with safety precautions. (NOS: FIC/N9450)	Ensure maintenance of perfect standard of hygiene.
	Select tomatoes and other ingredients for preparation of Tomato juices, puree, sauces, ketchup etc.
	Demonstrate the preparation of Tomatojuices, puree, sauces, ketchup etc.
	Examine, add preservatives and store tomato juices, puree, sauces, ketchup etc.
	Determine TSS and acidity of tomato juices, puree, sauces, ketchup etc.
7. Evaluate preparation and preservation of the jam, jelly and marmalades by using appropriate machines with safety precautions. (NOS: FIC/N9450)	Ensure maintenance of perfect standard of hygiene.
	Select fruits and other ingredients
	Demonstrate the preparation of fruit juice for fruit jelly.
	Test pectin in fruit juice.
	Demonstrate the preparation of jam/jelly/marmalades
	Determine the end point for jam/jelly/marmalades.
	Judge the consistency for jam/jelly/marmalades.
	Examine,add preservatives and store jam/jelly/marmalades.
8. Assess preparation of preserves (murabba), candy, crystallized and fruit bar by using appropriate machines such as solar drier, cabinet drier etc as per food safety standard. (NOS: FIC/N9451)	Ensure maintenance of perfect standard of hygiene.
	Select fruits/vegetables and other ingredients for preparation of fruit/vegetables preserves (murabba), candy, crystallized and fruit bar.
	Demonstrate the preparation of fruit/vegetables preserves (murabba), candy, crystallized and fruit bar.
	Demonstrate the Preparation of syrup.
	Demonstrate the preparation of murabba.

	Test and adjust TSS content of syrup.
	Demonstrate Drying of fruits/vegetables for candy/ Crystallized products.
	Illustrate Packing and storage for preserves (murabba), candy, crystallized and fruit bar.
9. Evaluate preparation of fruits/vegetables pickles with oil, salt, vinegar and spices, determine acidity content as per food safety standards. (NOS: FIC/N9451)	Ensure maintenance of perfect standard of hygiene.
	Select fruits/vegetables and other ingredients for preparation of fruits/vegetables pickles.
	Explain the Washing & cleaning procedures of fruits/vegetables.
	Demonstrate the preparation of fruit/vegetables pickle.
	Demonstrate the preparation of spices used during making of pickle.
	Demonstrate the preparation of pickles with oil, salt/vinegar.
	Test titrable Acidity in pickle.
	Illustrate the Packing and storage.
	Explain the food safety standards.
10. Demonstrate drying and storage of seasonal fruits & vegetable with appropriate methods of drying and dehydration. (NOS: FIC/N9449)	Ensure maintenance of perfect standard of hygiene.
	Select fruits/vegetables required for drying.
	Demonstrate the preparation of fruits/vegetables for drying.
	Demonstrate Drying of the fruits/vegetables by sun drying/ cabinet drying /solar drying.
	Determine the moisture content.
	Illustrate the Packing and storage.
11. Demonstrate operation of Bottling, can fillers, form fills, seal machines and examination of tetra packs with safety precaution.(NOS: FIC/N9452)	Ensure maintenance of perfect standard of hygiene.
	Select products for the packing.
	Examine the Cleaning of machines before and afteruse.
	Demonstrate the Filling of bottle with the help of bottlefilling machine.
	Demonstrate the Filling of can with the can filling machine/Hand filling.
	Demonstrate the operation to fill the products in pouches with the help of form fills and seal machines.
	Demonstrate the Corking, lidd.ing and sealing according to the operation.
	Examine the types of packaging material used in fruits and vegetables industry.
	Select packing material sample for testing.
	Select machine and tools for testing of the packagingmaterials.
	Estimate the WVTR, GTR, BURSTING STRENGTH, TENSILE STRENGTH, TEARING STRENGTH, DROP TEST ETC. as per packaging material.
	Examine the material used in tetra pack layers.
	Estimate the weight of various types of tetra pack.

	Determine the thickness and dimension of tetra pack.
12. Illustrate the canning operation of fruits and vegetables by using appropriate machines with safety measures.(NOS: FIC/N9452)	Ensure maintenance of perfect standard of hygiene.
	Select fruits and vegetables for canning.
	Demonstrate the Preparation of fruits and vegetables for canning.
	Demonstrate the Grading of fruits and vegetables for uniformity of the can product
	Demonstrate the washing of fruits and vegetables for cleaning.
	Choose the various kinds of peeling process as per the nature of fruits and vegetables.
	Examine the cutting of fruits and vegetables.
	Demonstrate the blanching of vegetables.
	Demonstrate the Filling of prepared fruits and vegetables into the can.
	Demonstrate the Filling of syrup in case of fruits.
	Demonstrate the Filling of Brine in case of Vegetables.
	Demonstrate the Exhausting process of can in Exhausting box.
	Demonstrate the sealing of cans.
	Demonstrate the Processing (Sterilization) process of cans.
	Illustrate the Packing and storage.
	Estimate the quality test of brine and syrup.
	Determine the iron content in canned foods.
	Explain the different type of lacquers and submit report.
13. Exhibit effective communication skills with logical reasoning ability and quantitative aptitude to maximize efficiency in work.(NOS: MEP/N9446)	Demonstrate reasonable quantitative aptitude and interpret data in the field of work
	Demonstrate effective communication skills with logical reasoning ability.
	Describe method of energy conservation and day-to- day contribution to work for optimum utilization of resources.
	Demonstrate English language fluency while carrying out official work.

8. INFRASTRUCTURE

LIST OF TOOLS AND EQUIPMENT –FRUITS & VEGETABLES PROCESSING (CITS)			
For batch of 25 candidates			
S No.	**Name of the Tools& Equipment**	**Specification**	**Quantity**
A. Equipment, Machine & Tools			
1.	Vacuum filter		1 no.
2.	Soda water machine		1 no.
3.	Basket press		1 no.
4.	Filter press		1 no.
5.	Form fill seal machine		1 no.
6.	Centrifuge		1 no.
7.	Glass jars, various sizes and screw-on caps		As required
8.	Wooden spoons		05 nos.
9.	Digital Weighing Balance: Auto Calibration should be provided with respect to temperature.	Capacity: 220 gm Readability: 0.1 mg or 0.0001 gm Weighing Pan: 80 mm or large, with wind draft shield	01 no.
10.	Laboratory Spray dryer		1 no.
11.	Complete Lab scale bottling plant for beverage.	10 litre / Hrs.	01 no.
12.	Baby Boiler coil type, Fuel light oil, force circulation 3 pass design.	Capacity of steam output 100kg/hr, fuel firing automatic, Electric supply AC,3 PH, 415 V,50HZ,4 Wire system, Qualified attended not required	01 no.
13.	Steam jacket kettle double jacketed with indenting lever, steam inlet and outlet with steel trolley and accessories to be fitted with boiler.	Upto 25 litre	01 no.
14.	Deep freezer: High performance freezers with lock, digital display and contact for remote monitoring. Flexible grid dividers can be configured to suit your individual requirement. Features: Digital display, visual alarm, low energy consumption, contact for	Technical specifications: Gross Capacity: 130 Litres. Net Capacity: 130 Litres. Temperature Range: -10^{0}C to -45^{0}C. Ambient Temperature: 30^{0}C.	01 no.

	remote alarm, pull-out defrost drain for easy defrosting, lock, castors and baskets.		
15.	Vacuum pan	Capacity upto 50 litre evaporation/ Driven by motor reduction gear box/inside vessel made up of thick stainless steel plate/outer jacket is of S.S./with mail hole and sight glasses on 2 sides/Stirrer are made of Teflon blades. Fitted with an outer at the bottom and a condensate receiving vessels.	01 no.
16.	Mechanical peeler/ Batch type for fruit and vegetable peeling.		01 no.
17.	Water purifier with pre filter, activates charcoal / resin unit and UV exposure units. Complete with water supply tank and piping.		01 no.
18.	Fruit mill	junior model, upto 20kg/hr with 1/2 hp motor	01 no.
19.	Pulper: • Capable of extracting the pulp of fruits such as Mangoes,Guavas, Peaches, Bananas etc. • Mounted on heavy duty mild steel stand, the central pulping unit of the machine consists of a pair of brushes fixed on stainless steel shaft and one stainless steel sieve. The gap between the sieve and the brushes should be adjustable • The sieve should provided in perforations of different sizes and is easily removable for quick Interchanging and cleaning.	All contact parts should be of S. S. -304 Grade stainless steel. Capacity: Upto 10-20 Kg/Hour, Fitted with! / H. P. Motor.	01 no.
20.	Hot Air Oven: • Should be double walled unit: - outer chamber should made up of M.S. Sheet duly painted & inner must be made up of S.S. Sheet. • Temperature should be controlled by Microprocessor Based PID Digital Temperature Indicator-cum-Controller.	ambient to 390^{0}C with an accuracy of ±3^{0}C 220/230 Volts A. C. Inner Size (W*D*H): 605*605*605 mm	01 no.

	• Air ventilators should also be provided on the sides & Air Circulation fan be a standard feature. • Supply		
21.	Refrigerator:	Capacity: 310 Liter dimensions Approx. 580x 1680x 650 mm, door cooling system, humidity controller, deodorizer, door finish vinyl, vegetable tray. Sixth sense cooling system	01 no.
22.	Auto claves	20 lit cap	01 no.
23.	Juice Extractor	Screw type 1 HP motor	01 no.
24.	Lime Juice Extractor & orange juice halving & Burring		01 no.
25.	Crown corking machine hand/paddle operated one.		01 each
26.	PH Meter (Digital)		01 no.
27.	Bottle washer	with! HP motor, single phase, two heads for brushes, water spray unit of 10-12 bottles.	01 no.
28.	Improved stove made up of MS with proper safety measures ,	with gas cylinders	02 nos.
29.	Heat Sealing Machine Hand/Pedal Operated		01 no.
30.	Liquid filling machine	For filling liquid in bottles, 200ml, 500ml, 1000ml. Manually operated	01 no.
31.	Electric Mixer		02 nos.
32.	Vernier Calliper	15cm 0.01 mm LC	01 no.
33.	Lemon Squeezer Stainless steel		01 no.
34.	Weighing balance (digital)	0.01gm (Min) ,5kg (Max), 100kg (Max	01 each
35.	Refractometers (Pocket)	0-32,28-62,58-920 Brix Sugar Scale	01 each
36.	Thermometer (Digital)		06 nos.
37.	Brinometer (Salinometer)		02 no.
38.	Hydrometers of different ranges	0-30, 30-60, 60-90,	01 each
39.	Brix hydrometer		As required
40.	Fruit Trays		6+2 nos.

41.	Stainless steel mugs		08 nos.
42.	Stainless steel bowls		08 nos.
43.	Sandashi (Tongs)		01 no.
44.	Perforated spoons	S.S.12"Length 4 " dia	06 nos.
45.	Coring knife		06 nos.
46.	Pitting knife		06 nos.
47.	Cutting knife		06 nos.
48.	Pilfer proof capping machine		01 no.
49.	Can and cork Remover		As per requirement
50.	Stainless steel trays of assorted size		16 nos.
51.	Stainless steel buckets or stainless buckets		06 nos.
52.	Spoons, Wooden Ladle		16 nos.
53.	Masons Jars	for 1 gross bottle	01 no.
54.	Water Tank with tap	4'x4'z3'	01 no.
55.	S.S.Vessels with lids.	20 lit cap	10 nos.
56.	S.S. Vessels with lids.	6 lit cap	06 nos.
57.	S.S.Vessels with lids.	10 lit cap	06 nos.
58.	Hand Washing basin with tripod stands		03 nos.
59.	Bottle Stand for	1 gross bottle	01 no.
60.	Stainless Steel Pricker		06 nos.
61.	Steel scale	12" Standard steel	04 nos.
62.	Stainless Steel Strainer/Sieve		06 nos.
63.	Electronic Geyser	25 litre	01 no.
64.	Stainless steel knife		6pcs+16pcs
65.	Spoons of assorted size		16pcs
66.	Exhaust fan for lab		As per requirement
67.	Fire Extinguisher CO2, for Lab and near Boiler	25kg	As per requirement
68.	Filter press		01 no.
69.	Pressure pump for the washing of machines	with 2 nozzles	01 no.
70.	Carbonation machines with CO2 cylinder		01 no.

71.	Continuous water supply for lab		As required
72.	Computer/laptop for Faculty with Internet Connection with, colour Printer and photo copy Scanner	CPU: 32/64 Bit i3/i5/i7 or latest processor, Speed: 3 GHz or Higher. RAM: -4 GB DDR-III or Higher, Wi-Fi Enabled. Network Card: Integrated Gigabit Ethernet, with USB Mouse, USB Keyboard and Monitor (Min. 17 Inch. Licensed Operating System and Antivirus compatible with trade related software.	01 no.
73.	LED multimedia Projector		01 no.
74.	UPS		As required
75.	AC		As required
76.	Labelling machine		01 no.
77.	Incubator with thermostat		01 no.
78.	Water Bath		01 no.
79.	Platform scale balance	100 Kg Capacity	01 no.
80.	Seed germinator : Cabinet type, Different chambers, Temp and RH Controller		01 no.
81.	Vinegar generator : Chamber made of SS, with sparger and baffles		01 no.
82.	Fermenter : Bioreactor, SS, with sparger and baffles		01 no.
83.	Automatic pouch machine / filler sealer machine		01 no.
84.	Can body reformer		01 no.
85.	Can seamer		01 no.
86.	Exhaust box		01 no.
87.	Cup sealer		01 no.
88.	Steel scale : standard steel	12 "	02 nos.
89.	Steel tape	Scales 1 meter, and of 50 ft	02 nos.
90.	Cutting equipments: Different knives, Cutters for fruits		As required
91.	Sinks : standard size		01 no.
92.	Hot plate : Electrical	2 KW	01 no.
93.	Tanks SS	50 liters capacity, cylindrical with cap	01 no.
94.	Syrup tanks	50, 100 lit capacity SS	01 each

95.	Pressure Cooker	5 Kg and 10 Kg SS	01 each
96.	SS filter	Sieve type cloth filter, hydraulic,	01 no.
97.	Bottle opener	Heavy duty, Stainless Steel	04 nos.
98.	Stainless steel / Aluminiumpots : Different Capacities		As required
99.	Wooden spoons : Different sizes		As required
100.	Alcohol Distillation Unit: Distillation unit with fraction distillation unit.		01 no.
101.	Abbe Refractometer: Must provide test piece, contact liquid and thermometer in wooden cabinet. Should include Silica Crucible (5 Pc)	Refractive index range 1.3 to 1.7 with an accuracy of 0.001 direct on scale and 0.0001 by estimation. Sugar percentage range 0 to 95% with an accuracy of 1% on scale and 0.1 by estimation.	01 no.
102.	Fruit crusher: This machine should be suitable for crushing stoneless fruits. Mounted on a heavy duty mild steel stand equipped with motor and starter. The material should be fed into the stainless steel hopper which feeds the product into the crushing drum, which must consists of stationery blades and rotary beater which crushes the loaded product.	Capacity: Upto 10-20 Kg/Hour, Fitted with! / H. P. Motor.	01 no.
103.	Water Analyzer: Instrument measure pH/mV, conductivity/ TDS/salinity, dissolved oxygen, temperature, colorimetric-Absorption, % Transmittance, and concentration and turbidity.	pH: Range 0-14 resolution 0.01pH Temp.: Range 0-1000 C Resolution: 0.10 C mV: Range +1999 mV Resolution: 1 mV Conductivity : Range 0.1-100micro mho at TDS factor 0.5 approx	01 no.

		Salinity : Range 0-40 ppt Resolution: 0.1 ppt D O : Range 0-20ppm Resolution: 0.1 ppm Colorimeter : Range 0-2.50Abs 0-100 % Transmittance Resolution: 0.001 abs, 0.1 % Transmittance Filter : blue, green and red Source: Tungsten lamp Turbidity: Range 0-100NTU Source: Tungsten lamp General: Display: 2 line 20 char, Power: 230 V A C.	
104.	Bursting strength machine,		01 no.
105.	Tensile strength machine,		01 no.
106.	Tearing strength machine		01 no.
107.	Drop tester machine.		01 no.
B. Consumables Tools & Items			
108.	Beaker	50, 100, 250 ml, 500 ml	12 nos.
109.	Conical flask	50, 100, 250 ml, 500 ml	12 nos.
110.	Measuring cylinder	100ml,250ml, 200 ml, 500ml,	12 nos.
111.	Measuring flask of assorted sizes		12 nos.
112.	Burrete of assorted sizes with Burrete stands		12 nos.
113.	Pipettes of assorted sizes		12 nos.
114.	Thermometer Digital	10°c to 110°C	16Pcs
115.	Rubber Gloves		12 pairs for each
116.	Aprons		01 for each
117.	Glass Funnels of assorted sizes		12 nos.
118.	Funnels Separating	500ml. & 100ml	12 nos.
119.	Test Tube With Test tube stand		25 nos.
120.	Glass rod		10 nos.
121.	Gas lighter		06 nos.

122.	Ph meter Rod		02 nos.
123.	Petri dish with cover		16 nos.
124.	Glass slides		16pcs
125.	Refilling of gas cylinder for lab		As required
126.	Air tight glass container of different size		As required
127.	Different types of Empty Tin Can for canning		As required
128.	Decaling agent for boiler coil		As required
129.	Fuel (Light oil) for boiler		As required
130.	Refilling of carbonation machine cylinder		As required
131.	Label for Labelling machine		As required
132.	Empty Glass Bottles	200ml,500ml,1000ml	As required
133.	Syphoning tube		6 nos.
134.	Crown caps		As required
135.	Buffer solution/ tablets		As required
136.	Photo Copy Paper A4		As required
137.	Scale		As required
138.	Correcting Fluid pen		As required
139.	Dusting Cloth		As required
140.	Pen		As required
141.	Temporary marker		As required
142.	Stapler (Small & Big)		As required
143.	Puncher		As required
144.	Fevi stick		As required
145.	Stapler Pin		As required
146.	Ruled Register		As required
147.	File Folder		As required
148.	Vim Liquid		As required
149.	Dettol Hand wash		As required
150.	Scotch Bright		As required
151.	Colin		As required
152.	Aluminium Foils		As required
153.	Duster		As required

154.	Juna		As required
155.	Raw material required for food beverages		As required
156.	Seasonal Fruits		As required
157.	Salt		As required
158.	Sugar		As required
159.	Other Chemicals/Raw material Require for Practical's		As required
160.	Chemicals for cleaning and sanitization of machines/equipments		As required
161.	Tissue paper roll		As required
C. FURNITURE			
162.	Instructor Chair & Table with Glass		01 no.
163.	Magnetic White Board		01 no.
164.	Display Board		01 no.
165.	Table for computer/printer/scanner with chair		01 Set
166.	Dual Desk		10 nos.
167.	Working table with	6-3x21/2	05 nos.
168.	Aluminium tops		
169.	Stools		25nos.
170.	Laboratory Table with rack and sinks	8'*2'-6"-6"	04 nos.
171.	Racks for keeping books (glass panel)etc		01 sets
172.	Trainee Locker	with space for 20	01 no.
173.	Storage Rack for Chemicals		01 no.
174.	Cup Board (large)		04 nos.
175.	First Aid Box		01 no.
176.	Fire Extinguisher		As required
177.	Almirha		02 nos.
178.	Wooden Show Case For keeping & Display sample		02 nos.
179.	White Board		01 no.


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