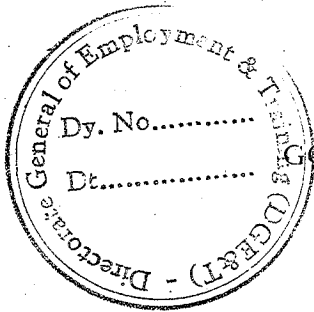


SYLLABUS FOR

PRESERVATION OF FRUIT AND VEGETABLES

Under
CRAFTSMEN TRAINING SCHEME



As approved by
GOVERNMENT OF INDIA

In consultation with
THE NATIONAL COUNCIL FOR
VOCATIONAL TRAINING



Issued by
GOVERNMENT OF INDIA
MINISTRY OF LABOUR
DIRECTORATE GENERAL OF EMPLOYMENT & TRAINING
SHRAM SHAKTI BHAWAN, NEW DELHI-110001
1982

LIST OF THE TRADE COMMITTEE MEMBERS FOR
THE TRADE OF PRESERVATION OF FRUITS AND
VEGITABLES

Under
CRAFTSMEN TRAINING SCHEME

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<u>Name & Designation</u> (S/Shri)	:	<u>Representing</u>
1. D.P.Nandi, Regional Director,	:	Regional Directorate of Apprenticeship Training, Hyderabad.
2. Mrs.Yamuna Ranga Rao: Principal,	:	Institute of Hotel Management, Catering Technology & Applied Nutrition, Hyderabad.
3. Surendra Kumar Sood, : Lecturer,	:	Institute of Hotel Management, Catering Technology & Applied Nutrition, Hyderabad.
4. Dr. (Mrs.) Sarojini, : Associate Professor,	:	College of Home Science, Hyderabad.
5. L.V.S.Reddy, Joint Director,	:	Directorate of Employ- ment & Training, Andhra Pradesh, Hyderabad.
6. P.K.Chakravarti, Joint Director,	:	A.T.I. Electronics & Process Instrumentation, Hyderabad.
7. R.K.Biswas, Dy. Director,	:	A.T.I. Electronics & Process Instrumentation, Hyderabad.
8. V.Ananthanarayanan, : Dy. Director,	:	Regional Directorate of Apprenticeship Training, Hyderabad.
9. T.Ebrahim Kutty, Training Officer,	:	Regional Directorate of Apprenticeship Training, Hyderabad.

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GENERAL INFORMATION

1. Name of the Trade : Preservation of Fruits
and Vegetables.
2. N.C.O.Code No. : 775.90
3. Entry Qualification: Pass 10th Class Examination
under 10+2 system of
education with Science or
its equivalent.
4. Duration of Crafts-
men Training. : 1 Year

SYLLABUS FOR THE TRADE OF PRESERVATION
OF FRUITS & VEGETABLES

UNDER CRAFTSMEN TRAINING SCHEME

Period of Training : 1 Year

Duration of Training 12 months (About 2000 Hours)

- A. RELATED INSTRUCTIONS 600 Hours.
1. History and development of food preservation industry with special reference to India.
 2. Principles and methods of food preservation both temporary and permanent with suitable examples of each. Different types of spoilages and their control by low temperature, freezing and cold storage.
 3. Fruits and vegetables as available in different parts of the country, their preservation, objects, season of maturity, fermentation, putrefaction causes and control.
 4. Selection of raw materials including fruits and vegetables for preparation of various products, preserving media, mode of action in preservation. Spices and other constituents their flavouring properties, condiments and other natural additives and ingredients, and their flavouring and preservative properties.
 5. Study of various types of equipment - care and precautions, usage.
 6. Food grades and standards F.P.O., I.S.I. Aag mark.
 7. Tomato products : Importance of tomatoes selection, preparation of common products such as juice, sauce, puree, ketchup etc.
 8. Fruit beverages : Preparation, preservation, dilution ratio of squash, crush, cordial, syrup, nector etc.
 9. Jams, jellies and marmalades - selection, preparation, regulations in production and preservation.
 10. Definition of preserves, candied fruits, glazed fruits, crystallised fruits - simple methods of preparation of these.
 11. Study of various types of containers - merits and demerits of each - scope for new types of

- containers/packing materials such as pouches packaging and packing materials, such as plastic pouches, aseptic brick packs, tetrapack, cartons etc.
12. Canning of fruits and vegetables - principles, procedure and steps involved - care in handling of common available fruits and vegetables in the region.
 13. Scheme and layout of canning industry in India.
 14. A general outline of canning and preservation of animal products Meat, Fish and Poultry.
 15. Canning procedure for Indian dishes and sweets, curried, vegetables, hubes and rasgollas.
 16. Pickles, chutneys and sauces, types, methods of preparation, curing techniques, defects and remedies.
 17. Sun drying & dehydration - merits & demerits - principles involved in drying and preservation.
 18. Constituents of food, importance of fruits & vegetables in the diet.
 19. Methods of storing of perishables, surface coating controlled atmosphere etc.
 20. Definition of Acids, Alkalies and salts, their properties etc.
 21. Study of Berved Vinagars such of cider, grape & malt etc.
 22. Importance of personal Hygiene, Sanitary standards in Fruits and vegetable preservation.
 23. Definition of preservatives - types of preservatives commonly used in food industry - limitations of use of preservatives.
 24. Types of spoilages in preserved foods. Their causes and control. Principal spoilage organisms in canned food.
- B. PRACTICALS 1400 Hours.
1. Preparation of common fruit beverages available in the region such as squashes, crushes, cordial, cocktails, syrups, nectars, R.T.S. beverages etc.
 2. Study of common food processing equipment such as seamers, juice extracting machines, autoclaves, corking machines etc.

3. Canning of Meat, Fish and Poultry products.
4. Canning of commercially important fruits and vegetables.
5. Preparation of tomato products such as juices, puree, sauces, ketchups etc. soup.
6. Preparation and preservation of common pickles, chutneys, sauces etc.
7. Selection, preparation of fruits for jams, jellies, marmalades available in the region.
8. Preparation of preserves, candies, crystallised and glazed fruits.
9. Preparation of fruit toffees, cheese and fruit bars.
10. Preparation of vinegars, synthetic vinegars.
11. Study of seal technology, Adjustment and selling of double seamer.
12. Identification of different lacquers, defective cans, precautions while consuming the canned foods.
13. Study and use of common instruments such as refractometer, Hydrometers, Jelmeter, thermometer, vacuum gauge, pressure gauge, seam checking gauge common balance etc.
14. Preparation of standard solution of salts, acids and alkalies used in food industries.
15. Estimation of acid in food products such as Jams, Jellies, cordials, canned fruits and vegetables, tomato products etc.
16. Estimation of sodium chloride quantitatively and qualitatively in food products.
17. Estimation of Benzoic acid in terms of ppm present in fruits and vegetable products.
18. Estimation of reducing and nonreducing sugars in fruit vegetable products.
19. Study of compound Microscope.
20. Identification of Bacteria, Yeast and mould under microscope.
21. Preparation and transfer of culture media.
22. Preparation of slides and use of simple strains.
23. Microbial Examination of canned foods.
24. Detailed cut out analysis of Fruit and Vegetable products.
25. Estimation of sulphurdioxide in terms of ppm present in fruit and vegetable products.

C. TOOLS & EQUIPMENT FOR THE TRADE OF
PRESERVATION OF FRUITS & VEGETABLES

(For a class of 16 Trainees)

Sl. No.	Name of Articles	Specifications if any	Quantity
1	2	3	4
1.	Vacuum gauge		1
2.	Pressure gauge		1
3.	Seam Checking gauge or screw gauge		1
4.	Refracto meters (Pocket)	0.32, 28-62, 58-92° B Sugar Scale	2 each
5.	Brinometer (Salinometer)		2 each
6.	Hydrometers of different ranges		
7.	PH Meter		1 each
8.	Working table with 6-3x21/2		1
	Aluminium tops		2+2
9.	Fruit trays		6+2
10.	Enamel mugs		8
11.	Enamel bowls		8
12.	Pulper Electric 1/4 Tonne capacity		
	per 8 hrs with 1 HP Motor and two		
	S.S. Siences (1/16 mesh. 1/32 mesh)		1
13.	Thermometer (360°C)		6
14.	Cooker Pressure		2
15.	Sealing Mochine for A 10, A 2½		
	type cans		1
16.	Vegitable grader		1
17.	Sandashi (Tongs)		1 each
18.	Perforated spoons S.S. 12" length 4"		
	dia		6
19.	Slicing machine		1
20.	Coring knives		6
21.	Pitting knives		6
22.	Cutting knives		6
23.	Juice Extractor (screw type)		
	1 HP motor		1
24.	Lime Juice Extractor & orange juice		
	halving & Burring		1
25.	Bottle filling machine-Electrically		
	operated with 1 HP motor		1
26.	Crown corking machine hand		
	operated one		1
27.	Pilfer proof capping machine		1

1	2	3	4
28.	Weighting balance ordinary		
	(grocer's) with set of weight		3
29.	Weight balance gold smiths with		
	weights		3
30.	Weight balance chemicals (one pan)		2
31.	Beaker	250 mlt.	12
32.	Conical flask	-do-	12
33.	Measuring cylinder	100 mlt 200,	
		500 ml	12
34.	Measuring flask	250 mlt	12
35.	Burrot with stands	50 cc	12
36.	Pipetto	25 cc &	
		10 cc, 5 cc	12
37.	Stainless steel knives		6 pcs+16
38.	Spoon of assorted size		16 pcs
39.	Stainless steel degches		6 pcs
40.	Gan and Cork opener		6 pcs
41.	Thermo motor (10° C to 100°C)		16 pcs
42.	Jelemeters		6
43.	Jelly Filter bags		4
44.	Kilburn dehyatomotor 12 tray		
	capacity with blower & heating coils		1
45.	Glass Funnels of assorted sizes		12
46.	Enamelled trays of assorted size		16
47.	Enamelled buckets or stainless		
	buckets		6
48.	Gas burner with cylinder		10
49.	Aluminium container 50 gallons		
	capacity		2 + 2
50.	2 Industrial burner with		2 cylinder
51.	4 Double burners with		2 cylinder
52.	Electric Mixer		1
53.	Spoons, Wooden Ladls		16
54.	Cooking range electric		1
55.	Rubber Gloves		12 pair for
			each trainee
56.	Aprons		1 for each
			trainee
57.	Electric Kettle		2
58.	Masons jars for confectionery		16
59.	Cup Board (Large)		4
60.	Bottle stand for 1 gross bottle		1
61.	Laboratory table with rack		
	(8'x2'-6"-6") provide with sinks		4
62.	Water tank with tap 4'x4'x3'		1
63.	Stools (high)		16
64.	Instructor's table and chairs		1 set
65.	Racks for keeping books etc.		1 set

1	2	3	4
66.	Deep Frezer		1
67.	Rotary flat can body reformer with change parts		1
68.	Hand die flanger with change parts		1
69.	Flange rectified with change parts		1
70.	Auto Claves 20 lit cap		2
71.	Wooden show case for keeping the samples & display of the products		2
72.	S.S.Vessels with lids 20 lit cap.	10	
73.	S.S.Vessels with lids 6 lit cap.	6	
74.	S.S.Vessels with lids 10 lit cap.	6	
75.	Inculator with themspot control		1
76.	Wooden Basket press 10 Kgs capacity (For pincapple juice extraction)		1
77.	Gas Lighter		1
78.	Hand Washing basin with tripod stands		3
79.	Kipps Apparatus		1
80.	Sepenting Funnels 500 ml. & 100 ml.	12	
81.	Test Tube		25
82.	Micrometer Seam Checking guage		1
