

**MAHARASHTRA STATE BOARD OF VOCATIONAL EDUCATION EXAMINATION, MUMBAI**

1	Name of Syllabus	<b>C.C. in Bakery and Confectionary Technician (401210)</b>																																																													
2	Max. No's of Student	25 students.																																																													
3	Duration	1 YEAR																																																													
4	Type	<b>Full Time</b>																																																													
5	No Of Days / Week	6 Days																																																													
6	No Of Hours /Days	7 Hrs																																																													
7	Space Required	Lab = 1000 Sq feet Class Room = 200 Sq feet TOTAL = 1200 Sq feet																																																													
8	Entry Qualification	S.S.C.																																																													
9	Objective Of Syllabus/ introduction	To enable the student to - 1. impart the scientific and technical knowledge in food science 2. impart the managerial skills of Bakery, Confectionery and Hospitality Industries 3. study the factors affecting food acceptance 4. provide the adequate number of professionals in Hospitality and Bakery Industries 5. develop the awareness about Food microbiology, Food hygiene and sanitation 6. enable the students to understand relationship between nutrition and human health 7. gain the knowledge of costing, Accounting and book keeping of catering and food industries 8. increase the awareness about Food laws, Regulations and Quality Control																																																													
10	Employment Opportunity	The trainee will either to be able to take up jobs with agencies which Maintain Develop Bakery and Confectionary or with working experience will be in a position to start his own independent Business.																																																													
11	Teacher's Qualification	Diploma in Bakery and Confectionary With 3 year Teaching experience																																																													
12	Training System	<b>Training System Per Week</b> <table><tr><td>Theory</td><td>Practical</td><td>Total</td></tr><tr><td>18 Hours</td><td>24 Hours</td><td>42 Hours</td></tr></table>						Theory	Practical	Total	18 Hours	24 Hours	42 Hours																																																		
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## THEORY I

### PART A

#### Food Science Technology & Costing

##### 1. Introduction to Food science and technology

Definition

Difference between science and technology

Scope of Food science and technology

Classification of foods on the basis of:

i) Nutrient

ii) Food groups

iii) Functional characteristics

Nutrient:

i) Definition of nutrients

ii) Functions of nutrients

iii) Nutritive value of foods

iv) Nutrient deficiency disorders

##### 2. Food sources: Natural/conventional food

###### I Plant food

###### a) Cereals, pulses and oil seeds

Importance, nutritional and economical significance and characteristics of

i) Cereals and millets: Jowar, wheat, rice, ragi, bajra, corn

ii) Pulses : Green gram, bengal gram, black gram, pigeon pea etc.

iii) Oil seeds : groundnut, sunflower, cotton, soybean, sessamum, linseed, safflower etc.

(**Processing** :Principle, processes, advantages and disadvantages of processes milling, grinding, dal milling, oil extraction.)

###### b) Fruits and vegetables

Production and processing profile

Classification

Nutritional importance

Compositional status

Processing

Causes of spoilage

###### II Animal food: Poultry (Egg)

i) Production profile

ii) Economic and nutritional importance

iii) Processing technology

iv) Spoilage: causes.

##### 3. Food preservation

Importance of food preservation, food production profile,

Processing profile, principle involved

Methods of food preservation:

i) Thermal preservation

ii) Non-thermal (cold/low temp) preservation

iii) Preservation by using chemicals

iv) Preservation by concentration

v) Fermentation

vi) Irradiation

##### 4. Food additives :

i) Antioxidants

ii) Acidulantes

iii) Stabilizers and thickeners

iv) Food colors

- v) Flavouring agents
- vi) Leavening agents
- vii) Colloids

### **5. Sanitation and personal hygiene (Bakery Industry)**

Organizational hygiene: Definition and importance

Principals involved

Sanitation procedures and water treatment

### **6. Food regulation and quality control**

Govt. organizations

NGOs

Food regulatory acts and their provisions under the existing law

PFA, AGMARK, BIS, ISO - 9000, HACCP, FPO

Food adulteration

## **THEORY I**

### **PART B**

#### **Theory**

#### **1. Importance of costing in food processing unit establishment and food cost control:**

Definition

Objectives

Obstacles and phases of food cost control

#### **2. Cost control system:** Basic operating elements (operating activities) :

Purchasing

Receiving

Storing and issuing

Preparing

Selling

#### **3. Elements of cost:**

Analysis of cost

Cost dynamics

#### **4. Control of labour cost and overhead:** Nature of labour cost; classification of overheads.

#### **5. Unit costing:** To achieve designed gross profit percent, sales mix percent, Unit cost, sales mix

#### **6. Standard costing: Definition,** Pre-requisites for standard costing, standard cost and standard costing

#### **7. Selling price control system:** Cost of production break even analysis and marginal cost

#### **8. Costing system of bakery products:**

Special problems of costing applied to a cookery/ bakery and confectionery unit.

Studies of waste, Cost control.

#### **9. Budget :** Definition; objectives; classification and types of budgets and budgetary control

#### **10. Data processing of cookery/bakery and confectionery unit :**

Importance; kinds of records; rules of generalization; laws governing foods and bakery service establishment, financial data and establishment data.

#### **11. Preparation of cash book and subsidiary books :**

Cash book, sales book, purchase book, petty cash book, journals, ledger, trial balance, financial statement (profit and loss account)

#### **12. Preparation of other records :** Stock registers, pay roll

#### **13. Maintenance and upkeep :** Documents, vouchers and other registers.

## **PRACTICAL - I - Food Science Technology & Costing**

### **PART A**

1. Cereal Technology :  
Identification of different cereals  
Comparison of different flours. Estimation of gluten and moisture content in flours
2. Wheat milling : Flow chart of roller milling
3. Fats and oils : Identification of different fats and oils, study of smoke point, creaming, emulsifying, shortening properties.
4. Egg cookery :  
Grading of eggs  
Identification of fresh and stale eggs by different tests like float and candle test, etc.
5. Canning and bottling of fruits and vegetables
6. Cool and cold storage
7. Blanching and freezing of fruits and vegetables
8. Drying/dehydration of fruits and vegetables by traditional and modern techniques.
9. Preservation of fruits and vegetables by Pickling, Jams, Jellies, Juices, Marmalade, Sauces and Ketchup
10. Sugar cookery: Identification of different types of sweeteners. Study of different stages in sugar boiling: use of thermometer and cold water test
11. Leavening agent :  
Identification, reaction in solution, reaction on application of heat
12. Colloidal chemistry :  
Study of emulsions, foams. Egg white foam and factors affecting it.
13. Food adulterants :  
Detection of adulterants in : raw ingredients and finished product in bakery
14. Microbiology :  
Study of simple and compound microscopes  
Simple staining and gram staining  
Morphology of bacteria, yeast and molds
15. Nutrient content:  
Calculation of energy, protein, carbohydrates, minerals and vitamins content in any ten bakery items
16. Visits to :  
Flour mill;  
Bakery /confectionery unit;  
Food processing plant

### **PRACTICAL I**

#### **PART B**

1. Market Survey : To know various bakery/cookery raw materials
2. Preparation of Purchase order based on the quotation collection :
  - (a) Market survey as per required materials
  - (b) Quotations, compiling, analysis, preparation of comparative statement : item wise
  - (c) Finalizing and executing purchase orders
3. Receiving cookery/bakery materials as per specifications :
  - a) Lay down S.P.S. for all the items
  - b) Check against S.P.S.
  - c) Take necessary steps to receive
4. Storing and issuing :
  - a) Make necessary arrangements to store received bakery and confectionery raw material and its issuing pattern

5. Indenting : a) Prepare indent for the cookery / bakery and confectionery material
- b) Receive the indent as per specification
- c) Make records
- 6) Calculation of portion sizes for bakery products
- 7) Calculation of standard cost, actual cost, variance and selling price for every cookery/ bakery product
- 8) Preparation of cash book and subsidiary books: Sales book, purchase book, journals, ledger, trial balance, financial statements (Profit and loss financial account)
- Note :** To be demonstrated with the help of tally package, cash book and petty cash book. Problems to be taught manually.
- 9) Visit to various bakery and confectionery industries.
- 10) Implant training in any one of the bakery and confectionery industry for cost control procedures.
- 11) Preparation of project report for capacity of production of ten varieties.

## **THEORY - II**

### **PART A**

#### **Bakery Technology**

##### **1. Introduction to utensils and equipments used in bakery unit and their uses**

Small equipments, big equipments and oven.

##### **2. Raw materials required for bread making and their functional properties**

Essential ingredients : Flour, yeast, water, salt.

Optional ingredients : Sugar, colour, flavour , fat,milk, milk powder and bread improvers.

##### **3. Stages in processing of bread**

Selection of ingredients

Weighing

Preparation of ingredients

Mixing, kneading

Fermentation

Knock- back

Dividing and rounding

Intermediate proofing

Moulding and panning

Final proofing

Baking

Cooling

Slicing

Packaging

Storage

##### **4. Bread Making Methods**

Straight dough method

Salt-delayed method

No time dough method

Sponge and dough method

Ferment and dough method

Ferment, sponge and dough method

Continuous bread making process

Chorleywood process

Advantages and disadvantages of various methods of bread-making

**5. Characteristics of good bread** : Internal characters; external characters

**6. Bread defects/faults**

Internal defects/ faults

External defects/ faults

Remedies

**7. Spoilage of bread**

Rope formation : Causes, detection and prevention

Mold growth : Detection, causes and prevention

**THEORY II**

**PART B**

**Theory**

**1. Physical assessment and quality evaluation of baked goods :**

External and Internal characteristics

Quality parameters

**2. Staleness of bread** : Definition, types and prevention

**3. Bread improvers** : a) Physical improvers

b) Enriching agents

c) Yeast Foods

**4. Pastry making** : Definition; types of pastry: short crust, puff pastry;  
methods of incorporation of fat, rolling and baking techniques.

**5. Bakery project profile** : Small bakery layout : Production capacity 5000 loaves  
Installation of bakery unit.

**6. Principles of sanitation and quality control in bakery unit** : Sanitation procedures  
Quality control : Assessment of quality parameters, maintenance.

**PRACTICAL - II - Bakery Technology**

**PART A**

**Practical**

**1. Equipments and machinery used in Bakery**

Small equipments

Big equipments

**2. Weight and measures**

Metric system

Imperial system

Conversion of length, weight and capacity

**3. Study of ingredients (Major and Minor)**

Characteristics of flour, yeast, shortening, sugar, egg and salts

**4. Dough testing**

Estimation of gluten content in atta, maida and besan

Determination of water absorption power (WAP) of dough

Yeast -Ferment test

Dough rising capacity

**5. Baking parameters :**

Fermentation :

Temperature - Conversion of oC to oF and vice-versa

- Temperature chart

## **6. Methods of bread making**

No time dough method ;

Bread roll, bread sticks, sweet buns, fruit buns and bread

Straight dough method ;

Bread, yeast doughnut, plain butter, surti butter, rusks, sweet toast, ladi pav

Ferment and dough method ;

Baba-au-rhum, savarine, crescent roll, hamburger roll

## **7. Study of characteristics of good /ideal bread**

## **8. Visit to commercial bakery**

## **9. Studies on marketing profile of bakery products**

### **PRACTICAL II**

#### **PART B**

#### **Practical**

1. Bread : Type of rolls

i) Lean roll - Five type

ii) Rich rolls - Five type

2. Bread :

a) Normal bread making techniques

i) Normal straight dough method

ii) Straight dough method

b) Emergency bread making techniques

i) No time dough method

ii) Sponge and dough method

iii) Salt delayed method

3. Dough nuts : Yeast dough nuts; combination dough nuts

4. Pizza : Pizza base

Sauce and filling variations

5. Pastry : i) Flaky pastry

ii) Puff pastry

iii) Khari

iv) Danish pastry

v) Choux pastry

vi) Short pastry

### **THEORY - III - Bakery Confectionery**

#### **PART A**

#### **Theory**

**1. Confectionery technology:** Definition, importance of sugar confectionery and flour confectionery

#### **2. Raw material:**

A) Major ingredients:

i) Flours : Type of Maida : Strong, medium, soft, high ratio, self raising, scone and other flours like corn, rice, barley, oat, rye, soya ,wheat etc.

ii) Confectionery sugars : Monosaccharide's, disaccharides and sugar syrups used in confectionery; type and their functions; other sources like glycerine, saccharine.

iii) Egg : Structure and functions. Quality evaluation.

iv) Baking fats : Types of fat, functions, sources, functional properties.

B) Minor ingredients :

i) Leavening agents : Leavening action in cakes: mechanical, chemical,

aeration and vapour pressure

Natural : Air and steam

Chemical : Type of Baking powder : fast, slow and double acting.

Ammonium bi-carbonate, Sodium bicarbonate

Type of yeast and its action as leavening agent

ii) Moistening agents : Importance and functions of moistening agents.

Water, milk and milk products, egg

iii) Colours and flavours : Type of colours and their functions

Colour : natural, synthetic, caramalization

Flavours : natural, processed and added flavor. Advantages and disadvantages of colours and flavours.

Precaution while using colours and flavours

iv) Fruits and nuts : Importance and type of fruits like fresh, and preserved fruits, dry fruits, nuts and nut paste.

v) Filling agents and setting agents : Used in confectionery like lemon curd, gelatine, egg white, etc.

### **3. Product Preparation:**

1. Cake making :

Ingredients and their function

Essential and optional ingredients

Structure builders

Tenderizers

Moisteners

Dryers

Flavour enhancers

2. Processing Protocol / Methodology:

Weighing, sieving, creaming, beating, fold in, panning, baking, cooling, packaging

3. Baking technology :

Selection and preparation of mould

Temperature and time required for different type of cake

Changes during baking

Baking and cooling loss

4. Preparation of cake batter

Sugar batter method

Flour batter method

Blending method

Boiled method

Sugar water method

All in process

## **THEORY III**

### **PART B**

#### **Theory**

**1. Cake recipe balancing:** Definition, formula balance, derivation of basic formula, general rules for balancing formula

**2. Quality parameters:** Characters of good cake: External features, Internal features

**3. Cake faults :**

Reasons for faults : Low quality of raw material

Imbalance of raw materials

Operational mistakes

Types of faults : Shape faults, texture faults, structure faults, crust faults, miscellaneous faults

**4. Cake decorations :** Importance of cake decoration and icing

Types of Icing : Flat icing, creamed icing, fluffy icing. Use of chocolate and coco in cake decoration.

**5. Preparation of cookies and biscuits :** Selection of ingredients used in cookies; types of cookies; methods of incorporating fat, rolling and making up techniques, baking

**6. Preparation of bakery products suitable for the patients suffering from :** Different diseases and different physiological conditions

**PRACTICAL - III - Bakery Confectionery  
PART A**

**Practical**

1. Weights and measures of ingredients commonly used in confectionery
2. Identification and study of characteristics of different confectionery flours with respect to texture, colour, flavor and taste
3. Sugar confectionery: a) Caramalization and browning  
b) Preparation of chikki: Five varieties  
c) Preparation of rewadi, battasha, gaathi, sugar pencil
4. Egg : Factors affecting foaming quality of egg; types of beaters, time, temperature and ingredients added.
5. Leavening agents : Different tests for leavening action of baking powder, sodium-bicarbonate and ammonium-bi-carbonate.
6. Preparation of products by using above leavening agents : Cookies, cake, baking powder doughnut, nankhatai, queen cake, sultana buns, vanilla buns, butterfly buns, pineapple fans.
7. Visit to market especially confectionery shops for selection of raw materials required for confectionery.
8. Visit to confectionery unit: Manual and automatic unit.

**PRACTICAL III  
PART B**

**Practical**

**1. Cakes :** Preparation and study of characteristics of good cake  
Pound cake, Fruit Cake, Christmas cake, Eggless cake, Sponge cake, Chocolate cake, Dundee cake, Plum cake.

Icing : Royal icing

Butter icing, Marzipan

Glaze icing, Gum paste.

**2. Biscuits and cookies :**

Orange biscuits

Jeera biscuits

Coconut, Sweet and salty biscuits

Peanut Macaroons

Tricolour biscuits

Nut rings

Jam buns

Nankhatai

Melting moment

Short bread  
Honey biscuit  
Swiss tart

### **3. Visit to confectionary unit**

#### **4. Candies:**

Milk toffee  
Mango toffee  
Petha  
Tut fruity  
Shrikhand burfi  
Alepak  
Sugar candies: lemon and orange

#### **5. Preparation of cake, biscuits and cookies suitable for different disorders :**

High calorie  
Iron rich  
Protein rich  
Calcium rich one product each  
Fiber rich  
Low calorie  
Low sugar

### **List of Equipments**

#### **(For a batch of 25 students)**

##### **No. Name of Equipment Qty.**

1. Work table with equipment 2' x 2'	15 Nos.
2. Double deck oven (5 k.g cap)	1
3. Planetary mixer (10 kg. cap. 2 H.P. Mixer)	1
4. Gas burner/stove (Domestic)	4
5. Sinks with drain board (Stainless steel)	5
6. Demonstration table (Work table with mirror and sink)	1
7. Wooden or Iron racks for cooking products. 5' x 4' x4 1 "	1 2
8. Bread tins - 800 g. 28 x 11 x 9 cm.	15
400 g. 20 x 10 x 7 cm.	15
9. Small equipments -	
Biscuit trays	2 Doz.
Patty tins	2 Doz.
Cake moulds	2 Doz.
Doughnut cutter	2 Doz.
Spatula	2 Doz.
Knives	2 Doz.
Measuring spoons	12 Nos.
Dough cutter	12 Nos.
10. Vessels - 2 Ltr. cap.	12 Nos.
1 Ltr. cap.	12 Nos.
50 Ltr. cap.	4 Nos.
Greater	12 Nos.
Sieves	12 Nos.
Wooden spoons	12 Nos.

Nozzles 4 per table	60 Nos.
Piping bag	12 Nos.
Tongs	12Nos.
Compound microscope	1.Nos.
Food adultration kit.	1.Nos.
11. Laboratory equipment/ Glassware :-	
Pipette	12.Nos.
Burette	12.Nos.
Beaker	12.Nos.
Conical flask	12.Nos.
Petri dish	12.Nos.
Test tube	12.Nos.
Wire loops	12.Nos.
Glass Slides	24 Nos.
Cover slips	2 boxes
12. Thermometer	12 Nos.
13. Pastry oven 10 Kv.	1.No.
14. Bread slicer hand operated 1 H.P. Motor	1.No.
15. Sealing unit	1.No.
16. Stainless steel table ( 6' x 3' x 2 1/2')	1.No.
17. Refrigerator 290 Ltr.	1.No.
18. Cycle	1.No.
19. Overhead Projector	1.No.
20. Slide Projector	1.No.
21. Magnetic cutout	1.No.
Chart board	
22. Black board (collapsible)	1.No.
23. Television along with video-cassette Recorder/CD player	1 Unit.
24. Dough mixer - 2 kg cap	1
25. Egg beater	12.Nos.
26. Enameled bowls	12 Nos.
27. Airtight container 4 kg cup	2 Nos.
2 kg cup	2 Nos.
1 kg cup	4 Nos.
28. Glass bottles (Wide mouth)1 kg. cup	6 Nos.
29. Plastic spoons of different sizes	6 Nos.
30. Rolling pin	10.Nos.
31. Frying spoon	10.Nos.
32. Thali	10.Nos.
33. Peeler	5 Nos.
34. Frying pan	4 Nos.
35. Cutting board	2 Nos.
36. Dough cutter	10 Nos.
37. Iron cupboard	2 Nos.
38. Soup strainer	2 Nos.
39. Measuring cylinder (1 lit cap)	10 Nos.
40. Measuring cylinder (500 ml cap)	5 Nos.
41. Egg containers (1 doz. cap)	2 Nos.
42. Electric blender	2 Nos.
43. First aid box	1 Nos.
44. Iron rack	2 Nos.

45. Single pan balance 2 kg. cap	1 No.
46. Single pan balance 5 kg. cap	1 No.
47. Digital balance	1 No.
48. Weight box (1g to 100g)	2 Nos.
49. Fractional weight box	2 Nos.
50. Micro wave oven with cooking vessels	1 Nos.
51. Swiss roll tray	10 Nos.
52. Garbage bin	4 Nos.
53. Dustbin	2 Nos.
54. Steel tub	4 Nos.
55. Food processor	1 No.
56. Electrical vacuum dryer	1 No.
57. Electric chakki (mini)	1 No.
58. Computer with internet and multimedia facility	1 No.
59. Gas burner with fitting	10 Nos.
60. Glass bottles (long neck) (1 lit cap)	6 Nos.

### Reference Books

1. Food cost control by Richard kotas and Bernard Davis. International Text Book company Ltd., 450, Edgeware Road, London wz 1En
2. Catering Management An Integrated Approach by Mohini sethi and Surjeet Malhan; Wiley Eastern Ltd.
3. Hotel and Catering costs and Budgets by Boordman R.D.
4. Management Accounting . by sharma.
5. Management Accounting : Concepts and cases by N.K. Kulshrestha
6. Introduction to Book keeping and Accountancy by Clark K.
7. Practical Book keeping and Accountancy by Davar and Nanabhoy.
8. Food microbiology by W.C. Frazier ; Tata mc Graw Hills Publishing Co. New Delhi.
9. Food commodities by Bernard Davies.
10. Modern cookery for Teaching and Trade by Thangam Phillip vol. I and II
11. Food science and Experimental Food by Evelyne wallace.
12. Basic Baking : Science and Craft by S.C. Dubey.
13. Hand book of Bakery products by S.M. Arora
14. Bakery Materials and Methods by Albert R. Daniel
15. Teach yourself series : Gas-electricity-plumbing by wilman C.W., The English language book society.
16. The Technology of Cake Making by E.B. bennion and G.S.T. Bamford.
17. Preservation of Fruits and Vegetables by Girdharilal G.S., Siddappa and G.L. Tandon.
18. Food science (std. XI) by Kukade, Sudarangani, Poreddy and Bhawe.
19. Bakery Technology and Manufacture by SBP Board of consultants and Engineers.
20. Up-to-date confectionery by Albert R. Daniel
21. Practical Baking by william J. Sultan

### Food Science and Technology

1. Bennion, Marion, Introductory Foods.
2. Bernard Davies, Food Commodities
3. Evelyne Wallace; Food science and Experimentals Foods.
4. Frazier, W.C., Food microbiology, Tata Mc graw Hills publishing Co., New Delhi
5. Girdharial, G.S., Siddappa and Tondon, G.L, Preservation of fruits and vegetables.
6. Kukade, Sadaranyani, Poreddy and Bhawe, Food Science (Std. XI)

7. Manay, N.S. and Shadaksharswamy M, Foods : Facts and principles, second ed; New age International (p) Limited, Publishers, Mumbai.
8. Margarate Mc William,; Food Fundamentals
9. Normal N. Potter ; Food Science

### **Basic Bakery Technology**

1. Albert R. Daniel ; Bakery materials and methods.
2. Arora , S.M., Handbook of Bakery products.
3. Bennion, E.B. and Bamford, G.S.T, The Technology of cake making.
4. Daniel, Albert R. Up to date confectionery.
5. Dubey, S.C ; Basic Baking Science and craft
6. SBP Board of consultants and Engineers; Bakery Technology and Manufacture,
7. Sultan W.J. Practical Baking
8. Thangam E. Philip; Modern cookery for teaching; Vol 1 and 2, Orient Longman Ltd. Bombay.
9. Wilman, C.W. ; Teach yourself series : Gas,electricity, plumbing, The English Language Book Society.

### **Food Costing and Financial Accounting**

1. Boordman, R.D; Hotel and catering : Costing and Budgets Cox and wizman ; London Sharma : Management Accounting.
2. Clark, K; Introduction; Practical Book keeping and Accountancy.
3. Davar and Nanabhoy; Practical Book keeping and Accountancy.
4. Edwards R.; Ruming your own Business; Oyez pub. and ward Lock; London.
5. Kotas Richard and Davis Bernard ; Food cost control, International Text Book company Ltd. 450 Edgeware Road, London wz IEn.
6. Kulshrestha , N.K.; Management Accounting ; Concepts and cases.
7. Moscore, S.A : Accounting Fundamentals : A Self instructional approach ; Reston : Virginia
8. Sethi Mohini and Malhan surjeet, Catering Management : An Integrated Approach; New Age International (p) Ltd. Publishers, Pune.

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