CONFECTIONERY

Students Handbook & Practical Manual

CLASS

XI

CENTRAL BOARD OF SECONDARY EDUCATION

Shiksha Kendra, 2, Community Centre, Preet Vihar, Delhi-110301

BUILDING SKILLS•BUILDING FUTURE•

Confectionery

Students Handbook

CLASS-XI

CENTRAL BOARD OF SECONDARY EDUCATION

Shiksha Kendra, 2, Community Centre, Preet Vihar, Delhi - 110301

Confectionery , Students Handbook & Practical Manual, Class XI

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भारत का संविधान

उद्देशिका

हम, भारत के लोग, भारत को एक सम्पूर्ण [1]प्रभुत्व-संपन्न समाजवादी पंथनिरपेक्ष लोकतंत्रात्मक गणराज्य बनाने के लिए, तथा उसके समस्त नागरिकों को:

सामाजिक, आर्थिक और राजनैतिक न्याय,
विचार, अभिव्यक्ति, विश्वास, धर्म
और उपासना की स्वतंत्रता,
प्रतिष्ठा और अवसर की समता
प्राप्त कराने के लिए
तथा उन सब में व्यक्ति की गरिमा
[2]और राष्ट्र की एकता और अखंडता
सुनिश्चित करने वाली बंधुता बढ़ाने के लिए

दृढ़संकल्प होकर अपनी इस संविधान सभा में आज तारीख 26 नवम्बर, 1949 ई॰ को एतद्द्वारा इस संविधान को अंगीकृत, अधिनियमित और आत्मार्पित करते हैं।

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1. संविधान (बयालीसवां संशोधन) अधिनियम, 1976 की धारा 2 द्वारा (3.1.1977) से "प्रभुत्व-संपन्न लोकतंत्रात्मक गणराज्य" के स्थान पर प्रतिस्थापित।
2. संविधान (बयालीसवां संशोधन) अधिनियम, 1976 की धारा 2 द्वारा (3.1.1977) से "राष्ट्र की एकता" के स्थान पर प्रतिस्थापित।

भाग 4 क

मूल कर्त्तव्य

51 क. मूल कर्त्तव्य – भारत के प्रत्येक नागरिक का यह कर्त्तव्य होगा कि वह –

(क) संविधान का पालन करे और उसके आदर्शों, संस्थाओं, राष्ट्रध्वज और राष्ट्रगान का आदर करे;

(ख) स्वतंत्रता के लिए हमारे राष्ट्रीय आंदोलन को प्रेरित करने वाले उच्च आदर्शों को हृदय में संजोए रखे और उनका पालन करे;

(ग) भारत की प्रभुता, एकता और अखंडता की रक्षा करे और उसे अक्षुण्ण रखे;

(घ) देश की रक्षा करे और आह्वान किए जाने पर राष्ट्र की सेवा करे;

(ङ) भारत के सभी लोगों में समरसता और समान भ्रातृत्व की भावना का निर्माण करे जो धर्म, भाषा और प्रदेश या वर्ग पर आधारित सभी भेदभाव से परे हों, ऐसी प्रथाओं का त्याग करे जो स्त्रियों के सम्मान के विरुद्ध हैं;

(च) हमारी सामासिक संस्कृति की गौरवशाली परंपरा का महत्त्व समझे और उसका परिरक्षण करे;

(छ) प्राकृतिक पर्यावरण की जिसके अंतर्गत वन, झील, नदी, और वन्य जीव हैं, रक्षा करे और उसका संवर्धन करे तथा प्राणी मात्र के प्रति दयाभाव रखे;

(ज) वैज्ञानिक दृष्टिकोण, मानववाद और ज्ञानार्जन तथा सुधार की भावना का विकास करे;

(झ) सार्वजनिक संपत्ति को सुरक्षित रखे और हिंसा से दूर रहे;

(ञ) व्यक्तिगत और सामूहिक गतिविधियों के सभी क्षेत्रों में उत्कर्ष की ओर बढ़ने का सतत प्रयास करे जिससे राष्ट्र निरंतर बढ़ते हुए प्रयत्न और उपलब्धि की नई उंचाइयों को छू ले;

[1](ट) यदि माता-पिता या संरक्षक है, छह वर्ष से चौदह वर्ष तक की आयु वाले अपने, यथास्थिति, बालक या प्रतिपाल्य के लिये शिक्षा के अवसर प्रदान करे।

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1. संविधान (छयासीवां संशोधन) अधिनियम, 2002 की धारा 4 द्वारा प्रतिस्थापित।

THE CONSTITUTION OF INDIA

PREAMBLE

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a [1]**SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC** and to secure to all its citizens :

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity; and to promote among them all

FRATERNITY assuring the dignity of the individual and the[2] unity and integrity of the Nation;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do **HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.**

1. Subs, by the Constitution (Forty-Second Amendment) Act. 1976, sec. 2, for "Sovereign Democratic Republic" (w.e.f. 3.1.1977)
2. Subs, by the Constitution (Forty-Second Amendment) Act. 1976, sec. 2, for "unity of the Nation" (w.e.f. 3.1.1977)

THE CONSTITUTION OF INDIA

Chapter IV A

FUNDAMENTAL DUTIES

ARTICLE 51A

Fundamental Duties - It shall be the duty of every citizen of India-

(a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;

(b) to cherish and follow the noble ideals which inspired our national struggle for freedom;

(c) to uphold and protect the sovereignty, unity and integrity of India;

(d) to defend the country and render national service when called upon to do so;

(e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;

(f) to value and preserve the rich heritage of our composite culture;

(g) to protect and improve the natural environment including forests, lakes, rivers, wild life and to have compassion for living creatures;

(h) to develop the scientific temper, humanism and the spirit of inquiry and reform;

(i) to safeguard public property and to abjure violence;

(j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement;

[1](k) to provide opportunities for education to his/her child or, as the case may be, ward between age of 6 and 14 years.

1. Subs. by the Constitution (Eighty - Sixth Amendment) Act, 2002

Preface

In an increasingly globalized world and the changing paradigm of urbanized living the demand for Hospitality and Tourism has increased manifold the world over. In this ever expanding sector, it has become essential to provide Competency based Vocational Education. It is in this context that CBSE has launched a course in Bakery and Confectionary under Hospitality & Tourism vocational stream.

The Students Handbook on Confectionery attempts to describe the scope of Confectionary, Equipment and Terminology used in Confectionery, Role of raw materials used in Confectionery products and various Cake making methods.

The language used in this book is simple with lot of pictorial illustration. This will help students by giving them information in accessible style.

Practicing professionals from the fields of Hospitality and Tourism comprised the team of authors for this book. The Board thankfully acknowledges their contribution in completing the book in record time. I hope this book will serve a useful resource in this subject.

The Board is grateful to the members of the Committee of Course for their advice, guidance and total commitment towards development of this course. We are indeed indebted to these academic advisors who have lent us the benefit of their rich and insightful experience would like to appreciate Vocational Education Cell, CBSE for coordinating and successfully completing the work.

Comments and Suggestions are welcome for further improvement of the Book.

Vineet Joshi, IAS
Chairman, CBSE

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Bakery & Confectionery

Topic	Learning Outcomes
UNIT–I: Introduction to Confectionery	
1.1 Introduction to Confectionery	General Overview
1.2 Scope of Confectionery	❀ Identifying different type of Confectionery products. ❀ Differentiating between the bakery & confectionery products.
1.3 Confectionery terms 1.4 Small and Large Equipment used in Confectionery	❀ Students can learn brief definitions to the day to day useful Confectionery terms. ❀ Making the students aware to identify the different small equipment in confectionery. ❀ Having the knowledge of the different large equipment used in Confectionery. ❀ Find the durability and maintenance of the equipment.
UNIT–II: Role of Raw Materials used in Confectionery	
2.1 Introduction to Role of Raw Material used in Confectionery	❀ General Overview
2.2 Essential Ingredients for Cake	❀ Know the composition of flour used in Confectionery and its role. ❀ List down the uses of sugar in Confectionery. ❀ Make aware about the application of fat in Confectionery.
2.3 Optional Ingredients for Cake	❀ Find out the difference in optional and essential ingredients. ❀ To find the use of each of the optional ingredient. ❀ Different uses of milk for Confectionery.
2.4 Storage of Raw Materials	❀ Categorize the raw material as perishable, non-perishable ingredients. ❀ Different ways of storing the ingredients.
UNIT–III: Moistening Agent	
3.1 Introduction to Moistening Agents	❀ General Overview

3.2 Milk	❀ Know about the use of milk in Confectionery. ❀ Finding the composition of milk its different products.
3.3 Eggs	❀ To deliver the knowledge about the different forms of egg.
3.4 Water	❀ To find the uses of eggs in Confectionery ❀ Different types of water and their uses in Confectionery.
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4.2 Composition of Fats and Oils	❀ To make the awareness about composition of Fats & oil used in Confectionery. ❀ To know about manufacturing of fats & oil
4.3 Functions, Types and Storage of Fats and Oils in Confectionery	❀ The students should be able to find the uses of fats & oil in different Confectionery products
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5.2 Importance of Leavening Agents	❀ To learn about the leavening. ❀ To know the uses of leavening in different products.
5.3 Types of Leavening/Aeration	❀ Having knowledge of the different types of leavening agents. ❀ Finding the chemical leavening agents. ❀ To find biological leavening agents.
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6.2 Sugar Batter Method	❀ Finding the method and application of this method.
6.3 Flour Batter Method	❀ Making the students aware of this method and application of it.
6.4 Genoise/Sponge Method	❀ Knowing about the method and application of it in cakes
6.5 All in One Method	❀ To differentiate between the different method and application of these methods.

Module Objectives

BAKERY & CONFECTIONERY

S. No.	Unit/Chapter Name	Theory	Key Learning Objectives
1.	Introduction to Confectionery	14 hrs	❀ Scope of confectionery ❀ Bakery and Confectionery terms ❀ Small and large equipment used in bakery and Confectionery
2.	Role of Raw Materials used in Confectionery	14 hrs	❀ Essential ingredients: flour, sugar, shortening, eggs ❀ Optional ingredients: baking powder, milk, milk products, baking soda, dry fruits, dairy products etc.
3.	Moistening Agents	12 hrs	❀ Introduction ❀ Milk ❀ Eggs ❀ Water
4.	Fats and Oils	14 hrs	❀ Introduction ❀ Composition, functions in Confectionery, types and storage
5.	Leavening Agents	15 hrs	❀ Importance of leavening agents ❀ Types of leavening agents
6.	Cake Making Methods	15 hrs	❀ Sugar batter method ❀ Flour batter method ❀ Genoise method ❀ All in one/Blending method

Chapter–1

UNIT–1: INTRODUCTION TO CONFECTIONERY

1.0 Unit Overview & Description

- Overview
- Knowledge and Skill outcomes
- Resource Material
- Learning Outcomes
- Assessment Plan

1.1 Introduction to Confectionery

1.2 Scope of confectionery

1.3 Confectionery Terms

1.4 Small and Large Equipment used in Confectionery

1.0 UNIT OVERVIEW & DESCRIPTION

Overview:

This Unit will provide the students information about the scope of Confectionery. It will help to understand Confectionery terms and also small and large equipment used in Confectionery

Knowledge and Skill outcomes:

i. Understand the scope of Confectionery.

ii. Know about Confectionery terms

iii. Know about small and large equipment used in Confectionery.

Resource Material:

Matz, S. *Equipment for bakers.* McAllen, TX: Pan-Tech International, c1988.

Gisslin, *W. Professional baking*. New York : John Wiley & Sons, c1985.

Sultan, *W.J. Practical baking. 5th edition.* New York : Van Nostrand Reinhold, c1990

Pyler, E. *Baking science and technology*. *3rd edition.* Merriam, KS: Sosland Publishing Co., c1988.

Schunemann, C. & Treu, *G. Baking: the art and the science.* Calgary, Alberta, Canada : Baker Tech, Inc., c1988.

Learning Outcomes:

UNIT–I: Role of Raw Materials used for Confectionary	
1.1 Introduction to Confectionery	❀ Know about the definition of Confectionery ❀ General Overview
1.2 Scope of Confectionery	❀ To get familiarized with the Scope of Confectionery
1.3 Confectionery Terms	❀ List down all the terms used in Confectionery ❀ Understand the meaning of terms
1.4 Small and Large Equipment used in Confectionery	❀ List down all the equipment used in Confectionery ❀ Differentiate between Small and Large Equipment

Assessment Plan: (For the Teachers)

Unit-1	Topic	Assessment Method	Time Plan	Remarks
1.1	Introduction to Confectionery	Question and Answer		
1.2	Scope of Confectionery	Question and Answer		
1.3	Confectionery Terms	Question and Answer		
1.4	Small and Large Equipment used in Confectionery	Question and Answer		

1.1 INTRODUCTION TO CONFECTIONERY

According to the layman, CONFECTIONERY means cakes and puddings, it does not limit itself to the mastery of skills of cake decoration but it is about so many things like different pastes, different chocolates, different types of sugar based products. Being fairly broad based, a closer look will reveal that it prepares the students not just for preparing few products, but also prepare them for a large segment of confectionery products.

1.2 SCOPE OF CONFECTIONERY

A study of CONFECTIONERY opens up a large numbers of employment opportunities and avenues both by the way of wage employment.

Wage employment means that one works for another person or organization and receive wages or salary for services.

Self employment means that the individual is the owner of the enterprise. Lets us now take a look at the various job opportunities available under each of the vocational areas related to CONFECTIONERY.

Teaching:

In almost all schools under CBSE have the course BAKERY AND CONFECTIONERY in the vocational department where bakery and confectionery related activities are taught for which teachers with educational background of BAKERY AND CONFECTIONERY are required, BAKERY AND CONFECTIONERY teachers are required in schools and degree colleges. Besides this BAKERY AND CONFECTIONERY education background also required for Industrial Training Institutes, Institutes of hotel Management and Catering etc. To run hobby classes or teach small groups in all vocational areas of BAKERY AND CONFECTIONERY.

Self- Employment:

Catering:

Catering could be provided to fulfill needs of the society. Service could be extended for parties arranged at home. The trained professionals can also undertake catering services for people who are working in factories, offices and do not have time or arrangement to cook meals, particularly bakery related products, and as the new trend is coming in parties is of the bakery dessert and bread counters.

Wage Employment:

- Baker
- Counter Boy
- Manager

Self- Employment:

- Canteen
- Bakery Shop
- Bakery Fast Food
- Tea Shop
- Contact Catering Services
- Mobile Catering Service

The students can set up Confectionery, Ice-cream Parlour and Bakery. They can use innovation skills to develop new product with high nutritive value. It offers following jobs:

Wage Employment:

- Worker in a bakery
- Supervisor in a bakery

Self- Employment:

- Owner of a bakery
- Hobby Classes

The Confectionery is mainly divided into these following segments:

1. Cakes and Pastries
2. Chocolate Section
3. Sugar Confectionery

Cakes and Pastries:

This section includes the different preparations like-dry cakes, fresh cakes, cup cakes, puddings and pies. This section covers most of the products we see in a pastry shop.

Chocolate Section:

This section deals with the different preparations like molded chocolate, hand made chocolates, chocolate garnishes, sculptures etc.

Sugar Confectionery:

This section deals with the different preparations like candies, caramel, sugar craft, fondant, pulled sugar etc.

The student can try to learn any one or all of them and try to achieve expertise in them. Definitely the countries like FRANCE, AUSTRALIA, USA, and KORIA are far advance in terms of technology available, but India is also improving and there is lot of scope here also.

1.3 CONFECTIONERY TERMS

	Terms		Explanation
1.	**Aeration**	:	The treatment of dough or batter by charging with gas to produce a volume increase.
2.	**Albumen**	:	White part of egg.
3.	**Almond Paste**	:	Almonds ground to paste with sugar used for the different icings.
4.	**Ash**	:	The incombustible residue left after burning matter.
5.	**Bake**	:	To cook or roast by dry heat in a closed chamber such as an oven.
6.	**Baking Powder**	:	A chemical leavening agent composed of soda, dry acids, and corn starch used as chemical leavener.
7.	**Bars**	:	Sweet biscuits made in oblong or rectangular shape can have chocolate covering.
8.	**Batter**	:	A homogeneous mixture of ingredients with liquid to make a mass that is of a soft plastic character.

9.	**Blend**	:	A mixture of several ingredients.
10.	**Boiled Icing**	:	An icing made by boiling sugar and water to thread state (238'F or 115'C) then slowly adding it to beaten egg whites with additional beating.
11.	**Bran**	:	Skin or outer covering of the wheat berry.
12.	**Butter**	:	Fat obtained by churning cream.
13.	**Butter cream Frosting**	:	Rich, uncooked frosting containing powdered sugar, butter and or other shortening and whipped to plastic condition.
14.	**Butter Sponge**	:	Cake made from sponge cake batter to which shortening has been added.
15.	**Butterscotch**	:	A flavour produced by the use of butter and brown sugar.
16.	**Cake**	:	A product obtained by baking leavened and shortened batter containing flour, sugar, salt, egg, milk, liquid, flavouring, shortening, and a leavening agent.
17.	**Cake Faults**	:	Deviations from the standards of perfection for the type of cake.
18.	**Cake Machine**	:	Machine with vertical agitators operating at different speeds, used for mixing cake ingredients.
19.	**Caramelized Sugar**	:	Dry sugar heated with constant stirring until melted and dark in colour, used for flavouring and colour.
20.	**Carbohydrates**	:	Sugars and starches derived chiefly from fruits and vegetable sources which contain set amount of carbon, hydrogen and oxygen.
21.	**Carbonated Ammonia**	:	Leavening agent made of ammonia and carbonic acid.
22.	**Cardamom**	:	Seed of an East Indian spice plant, used for flavouring known as sweet spice too.
23.	**Casein**	:	The protein part of milk.
24.	**Cinnamon**	:	The aromatic bark of certain trees of the laurel family, ground and used as a sweet spice flavouring.
25.	**Citron**	:	The sweetened rind of the fruit.
26.	**Clear Flour**	:	Lower grade and higher ash content flour remaining after the patent flour has been separated.
27.	**Cocoa**	:	A powder made from chocolate from which part of the cocoa butter has been extracted.
28.	**Coffee Cake**	:	Sweet yeast leavened dough made in various shapes, with filling or topping.

29. **Colours** : Shades produced by the use of dyes.

30. **Compounds** : In the baking industry certain mixture of fats and oils.

31. **Corn Meal** : A coarse meal made by grinding corn.

32. **Cottage Cheese** : The drained curd of soured or coagulated cream, pressed and mixed until smooth.

33. **Cream** : The fat portion of cow's milk, also a thickened cooked mass of sugar, egg, milk and a thickener used for pies and fillings.

34. **Creaming** : The process of mixing and aerating shortening and another solid such as sugar or flour.

35. **Cream Pies** : One crust pies having cream filling, usually topped with whipped cream or meringue.

36. **Cream Puffs** : Baked puffs or cream puff dough which are hollow, usually filled with whipped cream or cooked custard.

37. **Crescent Rolls** : Hard crusted rolls shaped into crescents, often with seeds on top.

38. **Cripple** : A misshappen, burnt or otherwise undesirable unit.

39. **Crusting** : Formation of dry crust on surface of dough due to Evaporation of water from the surface.

40. **Cupcakes** : Small cakes of layer cake batter baked in muffin pans.

41. **Currant** : The acidulous berry of a shrub, usually dried.

42. **Custard** : A sweetened mixture of eggs and milk which is baked or cooked over hot water.

43. **Danish Pastry** : A flaky yeast dough having butter or shortening rolled into it.

44. **Dates** : The fruits of a species of palm.

45. **Date Filling** : A cooked blend of dates, water and sugar.

46. **Diastase** : An enzyme possessing the power to convert starches into dextrose and maltose.

47. **Dissolve** : To bring a solid into solution in a solvent.

48. **Docking** : Punching a number of vertical impressions in a dough with a smooth round stick about the size of a pencil, or smaller. Docking is done so that doughs expand uniformly without bursting during baking.

49. **Dough** : The thickened uncooked mass of combined ingredients for bread, rolls and biscuits, but usually applied to bread.

50.	**Doughnut**	:	A cake, frequently with a center hole, made of yeast or baking powder dough and fried in deep fat.
51.	**Dry Fruit**	:	Fruit from which most of the moisture has been removed by drying.
52.	**Dry Milk**	:	Milk from which the water has been removed by drying.
53.	**Eclair**	:	A long thin shell of the same paste as cream puffs.
54.	**Emulsification**	:	The process of blending together fat and water solutions of ingredients to produce a stable mixture which will not separate on standing.
55.	**Extract**	:	Essence of fruits of spices used for flavouring.
56.	**Fat Absorption**	:	Fat which is absorbed in food products as they are fried in deep fat.
57.	**Fermentation**	:	The chemical changes of an organic compound due to action of living organisms (yeast or bacteria), usually producing a leavening gas.
58.	**Fillings**	:	Sweet cream, jams, etc. placed between baked layers in cakes or shaped into yeast raised products.
59.	**Flavour**	:	An extract, emulsion, or spice used to produce a pleasant taste.
60.	**Flour**	:	Finely ground meal of Grain.
61.	**Fluff**	:	A mass of beaten egg white, air and crushed fruit.
62.	**Foam**	:	Mass of beaten egg and sugar, as in a sponge cake before the flour is added.
63.	**Fold**	:	To lap east dough over on to it-self. With cake batter on to itself to lightly incorporate ingredients.
64.	**Fondant**	:	Low moisture content sugar syrup containing a small quantity of invert syrup which has been rapidly cooled so that the sugar crystals are small in size.
65.	**Formula**	:	In baking, recipe giving ingredients and the method of combining them.
66.	**Fruit Cake**	:	A cake containing large amounts of fruits and nuts with only enough cake batter to bind them together.
67.	**Germ**	:	The part of the seed from which the new plant grows.
68.	**Glace**	:	Sugar so treated as to resemble ice.
69.	**Glucose**	:	A simple sugar made by action of acid on starch.

70. **Gluten** : The elastic protein mass that is formed when the protein material of the wheat flour is mixed with water.

71. **Glutenin** : One of the two proteins comprising gluten, which gives strength.

72. **Greasing** : Spreading a film of fat on a surface.

73. **Honey** : A sweet syrupy substance produced by bees from flower nectar.

74. **Hot Cross Buns** : Sweet, spicy, fruity buns with cross cut on top which is usually filled with a plain icing.

75. **Humidity** : Usually expressed as 'Relative Humidity' which is an expression of percent of moisture in air related to the total moisture capacity of that air at a particular temperature.

76. **Hydrogenated Oil** : A natural oil that has been treated with hydrogen to convert it to a hardened from.

77. **Invert Sugar** : A mixture of dextrose and levulose made by inverting sucrose with acid or enzymes.

78. **Jelly** : A combination of fruit juice and sugar, stiffened by the action of the pectin of the fruit, as a result of heating.

79. **Lactose** : The sugar of milk.

80. **Lard** : Rendered hog fat.

81. **Leavening** : Raising lightening by air, steam, or gas (carbon dioxide). The agent for generating gas in a dough or batter is usually yeast or baking powder.

82. **Levulose** : A simple sugar found in honey and fruits.

83. **Loaf Cake** : Cake baked in bread pans or similar deep containers.

84. **Macaroons** : Small biscuits, made from coconut or almond paste, sugar and egg whites.

85. **Make-up** : Manual or mechanical manipulation of dough to provide a desired size and shape.

86. **Malt Extract** : A syrupy liquid obtained from malt mash, a product obtained as a result of converting the starch to sugar.

87. **Marble Cake** : Cake of two or three coloured batters partially mixed.

88. **Marshmallow** : A white confection of meringue like consistency.

89. **Marzipan** : Almond paste used for modelling masking and tortes.

90. **Masking** : Act of covering with icing or frosting.

91. **Meal** : Coarsely ground Grain.

92. **Melting Point** : The temperature at which a solid becomes liquid.

93. **Meringue** : A white frothy mass of beaten egg white and sugar.

94. **Milk** : The fluid secreted by the mammary glands of mammals.

95. **Mix** : The combined ingredients of a dough or batter.

96. **Mixing Bowl** : A concave, hemispherical container for mixing.

97. **Moisture** : Water content of a substance.

98. **Molasses** : Light to dark brown syrup obtained in making cane sugar.

99. **Muffins** : Small, light, quick breads baked in muffin pans.

100. **Pie** : Dessert with pastry bottom, fruit or cream filling and topped with meringue, whipped cream or pastry.

101. **Plasticity** : The consistency or feel of shortening.

102. **Proof Box** : A tightly closed box or cabinet equipped with shelves to permit the introduction of heat and steam used for fermenting dough.

103. **Raisins** : Dried sweet grapes, may be dark or bleached.

104. **Rocks** : Small rough-surfaced fruited cookies made from a stiff batter.

105. **Rolling Pins** : Smooth surfaced wood pieces for rolling dough.

106. **Rolls** : Small bread made from yeast leavened dough sometimes called buns may be hard or soft crusted.

107. **Royal Icing** : Decorative frosting of cooked sugar and egg white.

108. **Salt** : Sodium chloride, used for flavour and fermentation control.

109. **Shortening** : Fat or oil used to tenderize baked products or to fry baked products.

110. **Snaps** : Small biscuits that run flat during baking and become crisp on cooling.

111. **Spices** : Aromatic vegetable dry substance used for flavouring.

112. **Stabilizers** : Commercial preparations sold for used in meringue, pie fillings, icings and marshmallows.

113. **Steam** : Vapour formed and given off from heated water.

114. **Starch Water** : A mixture of corn starch and water made by boiling together one or two table spoons of corn starch with one quart of water. This is used for brushing on bread to give a shine to the crust.

115. **Sugar-Cane or Beet Sucrose** : Common and usually granulated sweetening agent.

116. **Corn-Dextrose** : A form of sugar made from corn and readily fermentable.

117. **Maltose** : A form of a sugar obtained by germinating cereal grain. Usually supplied cereal grain. Usually supplied as a syrup.

118. **Tarts** : Small pastries with heavy fruit filling or cream.

119. **Temperature** : Degrees of heat or cold.

120. **Tempering** : Adjusting temperature of ingredients to a certain degree.

121. **Testing** : Trying a cake or bread at the oven for doneness.

122. **Texture** : Describes the measure of silkiness of the interior structure of a baked product as sensed by the touch of the cut surface.

123. **Thermometer** : An instrument for measuring heat or cold.

124. **Tutti fruiti** : A confection or filling made of a fruit mixture.

125. **Vegetable Colour** : Liquids or pasts of vegetable nature used for colouring.

126. **Whip** : A hand or mechanical beater of wire construction used to whip materials such as cream or egg whites to a frothy consistency.

Exercise:

1. Prepare a list of the very important terms which are used in regular productions in Bakery and Confectionery.
2. Submit the chart to your teacher for assessment.

Review Questions:

A. Fill in the blanks:

1. _____ an instrument for measuring heat or cold.
2. _____ is Trying a cake or bread at the oven for doneness.
3. Common and granulated sweetening agent _____.
4. _____ is the consistency or feel of shortening.

B. State whether true or false:

1. Temperature is the degree of hot or cold.
2. Marzipan is the almond paste used for cakes.
3. The sugar of milk is glucose.
4. The fine powder of grain is called flour.

1.4 SMALL AND LARGE EQUIPMENT USED IN CONFECTIONERY

Small Equipment used in Confectionery:

1. **Measuring Jug:** An equipment used for measuring all the types of liquids in the liter.

2. **Biscuit Cutter:** It is used for the cutting of different types of biscuits. These are available in different fancy shapes.

3. **Wooden Spoon:** It is used at the time of cooking, specially sugar based products.

4. **Wire Whisker:** It is used for whisking egg and cream and helps to aerate with air.

5. **Turn Table:** It is used while icing on the cakes and pastries.

6. **Scrapper:** It is used while creaming and dough making to collect the raw material.

7. **Pizza Cutter:** It is a cutter used for cutting the pizza and sometimes to cut the rolled dough.

8. **Doughnut Cutter:** It is used for cutting the rolled doughnut dough.

9. **Icing Comb:** It is used while doing the cream icing on the cakes.

10. **Rolling Pin:** It can be of different material and of different lengths, used for rolling the dough.

11. **Nozzle Set:** It is used for the decorative work on cakes, cookies and different products.

12. **Strainer:** It is used for straining the liquids to remove impurities.

13. **Spatula:** It can be of wooden, plastic or rubber material and is used for removing batter or mixture from the machine bowl.

14. **Piping Bag:** It is used while piping the batters, cookies mix, cream icing etc.

15. **Basin:** A large bowl used for making of dough, batter or storage of food.

16. **Eclairs Mould:** A mould used for the baking of the eclairs mixture.

17. **Chocolate Mould:** A mould used for preparing molded chocolate.

18. **Bread Mould:** A mould used for preparing the molded breads.

19. **Tart Mould:** A mould used for the preparation of tarts.

20. **Muffin Tray:** A kind of baking tray for baking the batter of muffins.

21. **Caramel Custard Mould:** A mould used for the making of caramel custard.

22. **Fancy Mould:** It is used for the preparation of different fancy cakes.

23. **Cake Mould:** It is used for baking the cake batter.

24. **Flan Mould:** An equipment used for the making of flans.

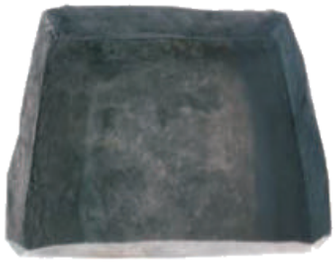
25. **Laddle:** An equipment used for the portioning of raw material and also for cooking.

26. **Pallet Knife:** A knife with parallel and without any sharp edges. Used for the different products like cakes, icing etc.

27. **Bread Knife:** A long knife with one edge with the grooved like saw, used for cutting of cakes and breads.

28. **Measuring Spoon:** It is used for measuring the dry ingredients in small quantity like 1.5 gms, 2.5 gms, 5 gms, 10 gms.

29. **Baking Tray:** It is used for the different baking like-breads, biscuits, pizza etc.



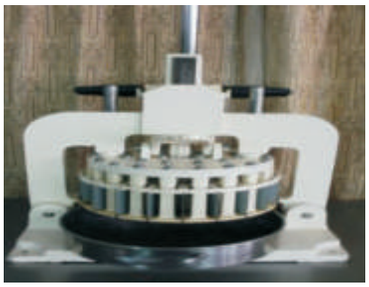
Large Equipment used in Confectionery:

1. **Weighing Scale:** It is used for the weighing the raw materials in the unit of grams and kilograms.

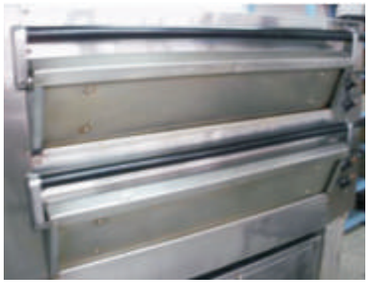
2. **Single Deck Oven:** It is an oven with the single deck used for baking.

3. **Table Top Planetary Mixer:** An equipment with the three attachments - kneader, whisker and creamer for different methods of preparations in bakery and Confectionery.

4. **Dough Divider:** An equipment used for dividing the dough into equal weights.



5. **Two Deck Oven:** It can be used for baking two different products at different baking temperatures.



6. **Tray Rack:** A rack to place the baked products and baking trays.

7. **Bread Slicing Machine:** A machine used for the slicing of the bread and cake loafs.

8. **Brick Oven:** An old style oven made of bricks, where wood and charcoal to be used for heating the oven.

9. **Spiral Kneader:** A kneader used for the bulk kneading.

10. **Proofing Chamber:** A cabinet used for proofing the dough, having a humidity controller.

11. **Flour Shifter:** An equipment used for the shifting flour in bulk quantity.

12. **Packing Machine:** An equipment used for the packing of prepared products which is for the sale.

13. **Sugar Grinding Machine:** A sugar grinder for bulk grinding of sugar.

14. **Dough Sheeter:** An equipment used for the sheeting of dough to a desired thickness.

15. **Refrigerator:** A storing cabinet for perishable products.

Exercise:

1. Prepare a chart pasting the different types of small and large equipment used in Confectionery.
2. Submit the chart to your teacher for assessment.

Review Questions:

A. Fill in the blanks:

1. _____ is the machine used for sheeting the dough.
2. A machine with three attachment in bakery is known as _____.
3. Machine which gives volume in dough before baking _____.
4. _____ improves the storage of icing cakes.

B. State whether true or false:

1. Bread knife has two sharp edges.
2. Dough sheeter divides the dough in equal portions.

C. Questions:

1. What is the difference between a single deck oven and a double deck oven?
2. What is the role of dough sheeter in Confectionery?
3. Why proofing chamber is important?

Chapter–2

UNIT–2: ROLE OF RAW MATERIALS USED IN CONFECTIONERY

2.0 Unit Overview & Description

- Overview
- Knowledge and skill outcomes
- Learning outcomes
- Assessment Plan

2.1 Introduction to Role of Raw Materials Used in Confectionery

2.2 Essential Ingredients for cake

2.3 Optional Ingredients for cake

2.4 Storage of Raw Materials

2.0 UNIT OVERVIEW & DESCRIPTION

Overview:

This unit will provide the student information about the importance of raw materials for Confectionery. It will help to understand the raw materials for Confectionery, their applications and uses in the Confectionery.

Knowledge and skill outcomes:

i. Understand the introduction of Confectionery.

ii. Know about essential ingredients like flour, sugar, shortening, eggs

iii. Know about optional ingredients like milk, baking powder, fruits etc.

Resource Materials:

i. Gisslin, W. *Professional baking.* New York: John Wiley & Sons, c1985.

ii. Sultan, W.J. *Elementary baking.* New York: McGraw-Hill, c1969.

iii. Sultan, W.J. *Practical baking. 5th edition*. New York : Van Nostrand Reinhold, c1990

Learning Outcomes:

UNIT–II: Role of Raw Materials used in Confectionery	
2.1 Introduction to role of Raw materials required for confectionery	❀ General overview
2.2 Essential ingredients for cake	❀ Know the composition of flour used in Confectionery and its role. ❀ List down the uses of sugar in Confectionery.

	❀ Make aware about the application of fat in Confectionery.
2.3 Optional ingredients for cake	❀ Find out the difference in optional and essential ingredients. ❀ To find the use of each of the optional ingredient. ❀ Know about different uses of milk for Confectionery
2.4 Storage of raw materials	❀ Categorize the raw material as perishable, non-perishable ingredients. ❀ Know about different ways of storing the ingredients.

Assessment Plan: (For the Teachers)

Unit-2	Topic	Assessment Method	Time Plan	Remarks
2.1	Introduction to role of materials required for confectionery	Question & Answer		
2.2	Essential ingredients for cake	Question & Answer		
2.3	Optional ingredients for cake	Question & Answer		
2.4	Storage of raw materials	Question & Answer		

2.1 INTRODUCTION TO ROLE OF RAW MATERIALS USED IN CONFECTIONERY

Cake is a baked batter made from flour, sugar, salt, leavening agents, shortening, milk, eggs and flavouring. These ingredients are combined in such a way that a fine-grained, tender product with attractive colour, pleasing flavour results. The general relationships of the ingredients that must be brought into balance differ according to the type of cake to be made. Quality cakes depend on the use of ingredients of high quality, proper mixing and panning methods, correct batter temperature, correct baking time and temperature and other factors.

2.2 ESSENTIAL INGREDIENTS FOR CAKE

Cake formulas can be classified into two main types, depending upon differences due to batter appearance or character. They are:

1. **Batter Type Cakes:** These cakes depend on eggs. Flour, and milk for structure and contain reasonably high percentages of fat. Much of the volume of the finished cake is achieved by the use of baking powder. Examples are butter cake, pound cake, layer cake, fruit cake etc.
2. **Foam Type Cakes:** These cakes depend principally upon the extension and denaturation of the egg protein for the bulk of the structure of the finished volume, and with one or two exceptions, can be regarded as unshortened cakes or cakes without shortening.

Depending upon the egg used, foam type cakes may be classified into:

a) **Meringue or Angel Food Type Cakes:** Which use only the egg white portion of eggs.

b) **Sponge Type Cakes:** Using either whole eggs or yolks or a combination of both.

c) **Chiffon Type Cakes:** Which are combinations of batter and foam and the resulting products, have a modified foam type grain and texture.

Wheat Flour:

Flour furnishes structure in cakes and is used to hold the other ingredients together. In general, cake flours are milled from soft wheats of low protein content. The role of wheat proteins in cake making is much less prominent than that in bread production. Low protein wheats provide weak quality gluten desired in cakes. A good cake flour would have low protein content varying from 7.0% to 8.5% depending on the type of cake being prepared. Thus, high quality batter type cakes may be obtained from flour containing 8.0 to 8.5% protein, whereas foam-type cakes are best prepared from flours of protein level below 8.0%. Millers normally mill a short patent flour for cake flour, this results not only in low protein content but also in low ash or bran content in the finished flour. An ash content of 0.38% and lower are desired for cake flour.

Granulation of the flour has considerable effect on the quality of cakes. Fine granulation and uniform particle size in cake flours result in fine-grained cake crumb with thin cell walls.

The milled cake flour may be bleached with chlorine and this results in a drop in flour pH value. Such bleached flour is called high ration cake flour. Cakes from bleached flours are more tender and less likely to collapse and have better crumb colour, finer grain and, often, greater volume.

Sugar:

Sugars are used primarily as sweeteners in cakes as well as in other sweet goods. In cake making, sugar also has a softening effect on the gluten in flour, resulting in tender texture. Sugars also fasten the rate of caramelization of the batter, allowing the cake crust to colour faster and thereby retain moisture in the baked cake. Sugar therefore contributes to texture, moistness and colour in cakes as well as sweetness and richness. Granulated sugar or granulated sucrose is the predominant form of sugar used in cake making. Dextrose, corn syrup, or invent sugar may be substituted for part of the sucrose in some formulas but they are less sweet than granulated sugars. Other forms of sugar that are occasionally used in cakes are malt extracts and honey, which are added for distinct flavour or for colour. In western countries, there has been an increasing trend towards the use of liquid sugars instead of granulated sugar where they have been found to give acceptable quality products.

Fats:

Fats are the primary enriching ingredient in cakes. The functional properties of fats with respect to cake making lie in its shortening, creaming and emulsifying effects on cake batters. Fat distributed in a cake batter prevents the formation of a gluten structure, producing what is known as shortness, and results in tenderness in cakes. The creaming ability of fat is, its ability to entrap air, is a very important factor in the production of good volume and texture in cakes. The emulsifying property of fat deterrmines how much liquid can be incorporated in a batter without the occurrence of curdling. The more liquid can be added to a cake batter, the more sugar will the batter be able to hold dissolved in the liquid. Shortenings, which have a high emulsifying power, are called high-ration shortenings.

The types of fats available for cake making are:

1. **Butter:** Butter is an emulsion of the water-in-oil type and consists chiefly of the fat of milk or butter fat together with curd, milk sugar, mineral salts, and about 14% water. It is obtained by churning the ripened cream of cow's milk. Butter is known for the distinctive flavour it imparts to baked products, but its creaming and emulsifying properties are inferior to other cake fats.

2. **Margarine:** Margarine is a fat resembling butter and is an emulsion of edible oils and fats with ripened milk. Its composition is similar to that of butter but it lacks the characteristic flavour of butter. Cake margarine usually has good creaming and emulsifying properties.

3. **Shortenings:** Shortenings are white or yellow fats for the most part from vegetable oils, refined and hardened. They are virtually 100% fat. Shortenings were first called compound fats because they are normally made from refined coconut oils, palm-kernel oil, cotton seed oil and other also have very good creaming properties and for this reason are commonly used in cakes as well. However, shortening cannot be excepted to give the flavour of butter, and where this flavour is required, it is advisable to use a proportion of butter in the cakes. Shortening when used in small proportions along with butter, helps impart excellent texture and better keeping qualities in cakes. If shortening is used to replace part, or all, of the butter or margarine in a mixture, it must be remembered that shortening is 100% fat whereas butter or margarine is only about 84% fat. Therefore, in order to maintain proper formula balances, only 396 grams (154 oz) of shortening should be used to replace 454 grams (1.1b) of butter or margarine.

4. **High-ration shortening or margarine:** These are a range of more specialized fats designed to have good emulsifying properties so that they are particulary suitable for the production of high-sugar, high-liquid cakes.

5. **Vegetable oils:** These are blends of oils from vegetable sources refined in the same way as shortening. The differ only in that they are liquid at normal temperature. Vegetables oils are used mostly in chiffon cake production.

6. **Lard:** Lard is fat separated from the fatty tissues of pigs by rendering. Pure lard does not cream up well by itself but lard can now be processed which does have fairly good creaming property.

Exercise:

a. Visit a retail shop or departmental store and identify the difffrent types of ingrdients available at the store, used in cake making and label them in the notebook.

- ❀ Submit the assignment to your teacher for evaluation.

b. Prepare a chart of the different brand names for the cake making ingredients and put them in individual columns.

- ❀ Submit the chart to your teacher for assessment

c. Prepare the chart showing category of the essential ingredients used in cake making.

- ❀ Submit the chart to your teacher for assessment.

Review Questions:

A. Fill in the blanks:

1. _____ Flour is suitable for making Cakes.
2. Sugar used for cakes should have _____ grains.
3. _____ grains sugar is good for whipping.
4. Shortening helps to retain _____ to the cakes.
5. egg works as the - in making of cake.
6. _____ is the most essential ingredient for structure of cake.

B. State whether true or false:

1. Poor quality of eggs used gives good quality of cake.
2. Sugar has the tenderizing effect on the structure of cake.
3. Shortening is used because of its neutral flavour and odor.
4. Flour works as a toughner in cake making.
5. Very strong flour is suggested for cakes.

C. Questions:

1. How the ingredients are classified for cake making?

2. What are the essential ingredients used for cake making?
3. Explain the cake flour in detail.
4. How the grain of sugar is important in cake making?
5. What function does egg have in cake making?

2.3 OPTIONAL INGREDIENTS FOR CAKE

Eggs:

Eggs are very important and a costly ingredient of bakery products especially cakes. Eggs furnish structure, moisture, flavour and colour in cakes. Eggs play a major role in the incorporation of air in foam type cakes and therefore in the resulting cake volume, grain and texture. Freshness is a very important requisite of eggs for cake making.

Milk:

The functions of milk in cake making should be considered according to its two component parts:

1. The milk solids part, which has a binding effect on the flour proteins, creating a toughening effect. Milk also contains lactose, which helps regulate crust colour. It adds richness and improves the flavour of cakes. It is an important moisture-retaining agent.
2. The water in liquid milk part, which may be approximately 121/2-90% depending on the type of milk, has a number of functions. It is neither a toughener nor a tenderizer, but when combined with other ingredients may contribute to both toughness and tenderness.

In cake bakeries, the common form in which milk is used in nonfat milk solid. It could either be spray-dried or roller-dried, the former being more popular. Some evaporated milk is also used.

Leavening Agents:

A desired quality of cakes in lightness, or a high ration of volume to weight. Lightness in cakes is due to a large extent to the action of leavening agents, which bring about the evolution of gas during the mixing of the batter and in the oven. The air incorporated into a batter by whipping or creaming is a form of leavening; so is water converted to steam in the oven. Eggs and shortening that whip or emulsify are also parts of the leavening system.

Added chemical leavening in cakes is mostly in the form of baking powder. Baking powder consists of balanced proportions of sodium bicarbonate and adic leavening agent. To provide the acid leavening a number of chemicals compounds are used according to the particular needs of the end product. Some end products call for the early evolution of gases in the batter phase and further gas production under oven heat. This is achieved by the so-called "double-acting" baking powder, consisting of the usual sodium bicarbonate with at least two acid components with different reaction rates.

The richness of cake formulas affects the level of chemical leavening to use. Thus, rich formulas derive a larger portion of leavening from the mixing operations and require less chemical leaveners

than cakes made from lean formulas. The following provides a basic comparison of rich and lean cake formulations.

Rich Formulas	Lean Formulas
Less Chemical Leavening	More chemical leavening
Lower Oven Temperature	Higher oven temperature
More air is incorporated during mixing	Less air is incorporated
Lower specific gravity	Higher specific gravity

Salt:

Salt is used as an adjustment of sweetness and therefore contributes to flavour.

Flavouring Ingredients:

Flavour extracts are solutions of the flavours in ethyl alcohol or some other solvents. The base of these flavours is the extracted essential oil of the fruit or bean. There are also a number of imitations flavouring ingredients available at present. Due to variation in strength of flavours, it is not possible to set any given amount to be used. Flavouring agents seldom have any function other than to enhance the aroma and flavour of the cake.

Water:

Water is present in sufficient quantity in cake batters to dissolve sugar, salt and other solid ingredients. Water adds moisture to the finished cakes and also regulates the consistency of the batter. It develops the protein in the flour to a very limited extent in order to retain better the gas produced by baking powder in the cake formula.

Exercise:

a. Prepare a chart pasting the wrappers of the different bakery products and mark the optional ingredients used in making those products.

- Submit the chart to your teacher for assessment.

Review Questions:

A. Fill in the blanks:

a. _____ is the optional ingredient used in cake making in fruit cake.

b. Milk improves _____ in the cakes

c. Baking soda is used in _____ cakes.

d. _____ improves the taste of the cakes.

e. _____ are used for giving volume to the cake

B. State whether true or false:

1. Optional ingredients should not be used in good cakes.
2. Milk adds to the taste of the cakes.
3. Salt acts as taste enhancer in making cakes.
4. Baking powder and baking soda is the same product.
5. Ammonia bicarb can be used in making cakes

C. Questions:

1. What do you understand by the optional ingredients used in making of cakes?
2. What is the role of milk in making of cakes?
3. Why salt is important in cakes making?
4. Name the different leavening agents.

2.4 STORAGE OF RAW MATERIALS

Ingredients are received in both the quantity like in bulk and in small quantity. the largest volume ingredients in bakeries are flour, sweetener, shortening, oils and yeast and other leavening agents. The dry ingredients need to be stored at dry place to avoid the humidity and the perishable items need to be stored at the cold atmosphere.

After baking the product must be cooled to about 21degreeC prior to package. During the cooling of the product the additional moisture loss firms the product to hold the handling charges.

Review Question:

A. Fill in the blanks:

1. The dry ingredients need to be stored at _____.
2. The Perishable lines need to be stored at _____.

Chapter–3

UNIT–3: MOISTENING AGENTS

3.0 UNIT OVERVIEW & DESCRIPTION

Overview:

This unit will provide the information about the different types of moistening agents used in the Confectionery. It will help to understand the moisteners for Confectionery, their applications and uses in the Confectionery.

Knowledge and skill outcomes:

i. Understand the introduction of Confectionery moisteners.

ii. Know about moistening ingredients.

iii. Know about uses of moistening ingredients.

Resource Materials:

i. Sultan, W.J. *Elementary baking.* New York: McGraw-Hill, c1969.

ii. Sultan, W.J. *Practical baking. 5th edition.* New York : Van Nostrand Reinhold, c1990

iii. Matz, S. *Glossary of milling and baking terms.* McAllen, TX: Pan-Tech International, c1993.

iv. Matz, S. *Ingredients for bakers. 2nd edition.* McAllen, TX: Pan-Tech International, c1996.

Learning Outcomes:

UNIT–III: Moistening agent	
3.1 Introduction to Moistening Agents	❀ General Overview
3.2 Milk	❀ Know about the use of milk in Confectionery.

	❀ Find the composition of milk and different products.
3.3 Eggs	❀ To deliver the knowledge about the different forms of egg. ❀ To find the uses of eggs in Confectionery
3.4 Water	❀ To understand about different types of water and their uses in Confectionery.

Assessment Plan: (For the Teachers)

Unit-3	Topic	Assessment Method	Time Plan	Remarks
3.1	Introduction to Moistening Agents	Question & Answer		
3.2	Milk	Question & Answer		
3.3	Eggs	Question & Answer		
3.4	Water	Question & Answer		

3.1 INTRODUCTION TO MOISTENING AGENTS

The ingredients that provide moistness in the batter and adjust consistency of Confectionery products are called as Moistening Agents. In this unit we will study about three major types of Moistening Agents namely:

1. Milk
2. Egg
3. Water

3.2 MILK

Milk is an emulsion of tiny globules of fat in a water solution of protein, sugar and minerals. The composition of milk varies somewhat, depending on a number of factors. However, the average composition will be approximately that given in table 1. The principal constituents into which milk can be fractionated are shown in Figure 1.

Table 1: Composition of Milk

Water	87.5%
Total solid	12.5%
	100.0%

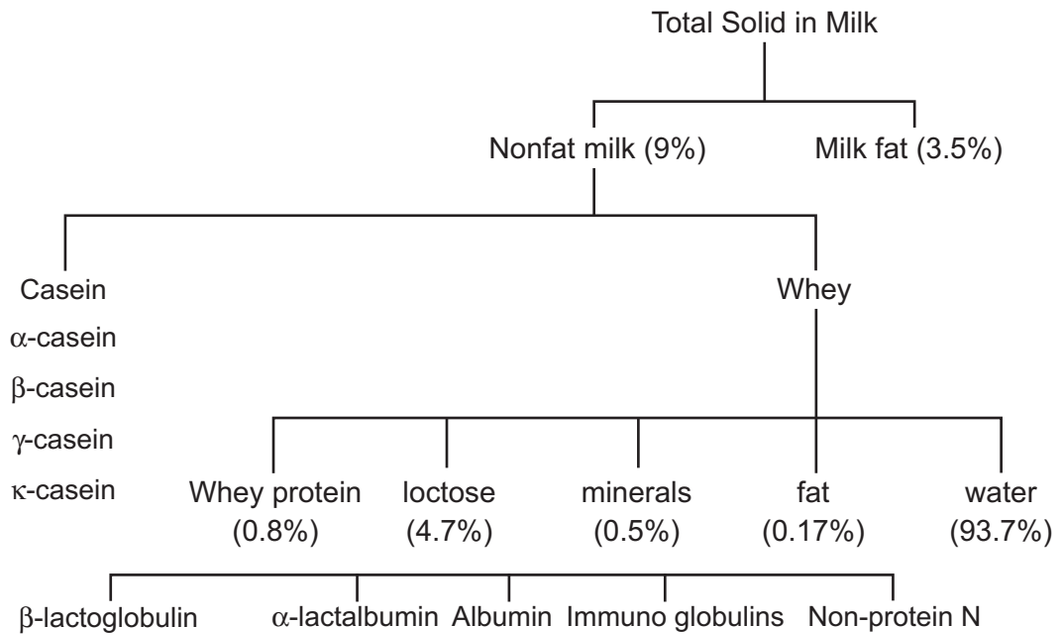


Figure 1: Principal Constituents of Milk

The specific gravity is between 1.025 and 1.035. Richer milk has a lower specific gravity.

Milk and milk derivatives have several effects on bakery foods and the results is generally improvement of the flavours and physical characteristics as well as the nutritive value. In bread, addition of properly heat-treated nonfat dry milk to the dough will generally improve the crust colour, increase water absorption and modify dough handling properties. The added water tends to be retained in the finished loaf with the result that the bread is somewhat softer. The lactose, being retained throughout processing, causes toast made from the bread to colour more readily and more uniformly.

Whole milk is used mostly in premium goods where the flavour contribution of butterfat can be worthwhile. Butterfat also has a pronounced shortening effect exhibited primarily as a weakening or breaking down of any gluten structure which may by present. As far as shortening action is concerned, properly selected cheaper fats can usually be substituted for butterfat with equivalent results.

In addition to the fresh fluid products, milk and its fractions are concentrated, dried and mixed with other substances to improve their utility for baking purposes (see table 2).

Table–2

Composition of Milk and Milk Derivatives

Product	Water	Fat	Protein	Carbohydrates	ash
Fluid Whole Milk	87.5	3.5	3.5	4.9	0.7
Fluid Skim	90.5	0.1	3.6	5.1	0.7

Cream 20% Butterfat	72.5	20.0	2.9	4.0	0.6
Cream 30% Butterfat	63.4	30.0	2.5	3.6	0.5
Cream 40% Butterfat	54.3	40.0	2.1	3.1	0.5
Plastic Cream, 80% Butterfat	18.1	80.0	0.7	1.0	0.2
Milk fat (Butter Oil)	0.1	99.9	–	–	–
Butter (Unsalted)	17.5	81.0	0.6	0.4	0.5
Butter (Salted)	15.5	81.0	0.6	0.4	2.5
Butter Milk	90.5	0.1	3.5	5.1	0.8
Cheddar Cheese	37.0	32.2	25.0	2.1	3.7
Cheese Whey	93.2	0.3	0.9	5.1	0.5
Process American Cheese	40.0	29.9	23.2	2.0	4.9
Dry Whole Milk Solids	2.0	27.5	26.4	38.2	5.9
Milk - Solids-Not-Fat (MSNF)	3.5	1.0	35.6	52.0	7.9
Dry Buttermilk Solids	3.5	5.0	34.7	49.0	7.8
High Acid Buttermilk Solids (5.0% lactic acid)	4.0	5.0	34.5	43.7	7.8
Dried Whey	6.2	1.2	12.5	72.4	7.7
Plain Condensed Whole Milk	70.0	8.5	7.8	11.9	1.8
Plain Condensed Skim Milk	70.0	0.2	11.1	16.2	2.5
Plain Condensed Whey	32.0	0.6	10.1	51.3	6.0
Evaporated Milk	73.7	7.9	7.0	9.9	1.5
Sweetened Condensed Whole Milk (42.0% sucrose)	27.9	8.6	7.1	12.2	1.6
Sweetened Condensed Skim Milk (42.0% sucrose)	28.0	0.2	11.1	16.2	2.5
Sweetened Condensed Whey (38.0% sucrose)	24.0	0.3	5.6	28.7	3.4
Malted Milk	2.6	8.3	14.7	70.8	3.6
Lactose	0.15	–	–	99.85	–
Sodium Caseinate	3.5	1.5	90.0	1.0	3.5

Constituents of Milk:

1. **Proteins:** The two principal proteins in milk are:

   Casein between 75% and 80% of the protein of milk is casein. It is readily coagulated to a thick curd by acid, when the acid concentration reaches 0.5% to 0.7%. It is not readily coagulated by heat.

   Lactalbumin About 20% of the protein of milk is lactalbumin. This protein is not readily coagulated by acid but is readily coagulated by heat beginning at 105°F. At 212°F about 85% of the lactalbumin is coagulated.

2. **Lactose or Milk Sugar:**

   a) Lactose is the only sugar in milk.

   b) Lactose is a disaccharide made up of glucose and galactose.

   c) It is only slightly sweet, being rated by some investigators as only about 16% as sweet as sucrose.

   d) Since it is a reducing sugar, lactose participates in nonenzymic browning and improves colouration in the oven.

   e) It is acted on by bacteria (lactobacillus) to form lactic acid, this causes milk to sour.

3. **Butterfat or Milk Fat:**

   This is a mixture of glycerides of palmitic, oleic, myristic and buteric acids. It is colourless and tasteless. The colour of cream and of butter is due to carotene in the food eaten by the cows. The flavour of butter is due to products formed by lactic acid bacteria and to the salt which is added.

4. **Minerals:**

   Milk contains a number of mineral elements, but probably the most important are calcium and phosphorus. Milk is low in iron.

5. **Vitamins and Enzymes:**

   Milk contains all known vitamins and is a good source of vitamin A, riboflavin and B vitamins.

   Many enzymes are present in milk among them are:

   a) Protease, which breaks down proteins

   b) Lipase, which breaks down fats

   c) Oxidizing enzymes

Manufacture of Milk Products:

A number of products are made from milk by evaporation of part or all of the water, by removal of part or all of the fat, and by the addition of sugar.

Since the general procedures for making these products are very similar only two manufacturing procedure will be described. These are for the preparation of (1) condensed and evaporated milks and (2) dry condensed milk.

1. Condensed and Evaporated Milkshake:

The distinction between condensed and evaporated milk lies in the amount of water removed according to "Milk and Its Uses In The Bakery", published by the American Dry Milk Institute, Inc.

Condensed milk is evaporated to ? or ¼ of the original volume. Sweetened condensed milk contains added sugar (usually sucrose).

Evaporated milk is the name given the product if evaporated to ½ the original volume.

Manufacture:

Fresh milk is refrigerated in large tanks where it is blended to give the desired fat and total solids content. Because the proteins tend the coagulate when heated, stabilizers such as disodium phosphate, sodium citrate or calcium chloride may be added to a total of not more than 0.1% of the finished product. From the storage tanks the milk is pumped to a heated tank where it is pasteurized. The pasteurized milk next goes to a vacuum pan. This is a large closed kettle under sufficient vacuum so that milk boils between 10°F and 140°F. The milk is heated by steam coils until the desired amount of moisture has been removed. The concentration milk, after it leaves the evaporator or vacuum pan, is homogenized. In the process the fat particles are broken into such a fine state that remain suspend and do not rise to the top as cream.

Sweetened condensed milk is preserved from action of bacteria by the high sugar content it contains. Sealed cans of unsweetened evaporated milk are sterilized at 240°F for 15 minutes.

Storage of Evaporated or Condensed Milk:

- Canned sweetened condensed milk keeps best below 60°F and it will keep well at 70°F for at least 6 months. After this time it may gradually thicken and turn dark in colour. At higher temperatures, these changes take place more rapidly.
- Evaporated milk is very stable, although it is recommended that it be stored below 75 °F. Above 90°F, it will turn dark in time. After a can is opened and only a portion is used, the remainder should be stored in the refrigerator until used.
- If evaporated milk is purchased in barrels or unsealed cans, they must be kept refrigerated until used. When delivered, the milk should not be above 40°F to 45°F, and it should be stored at this temperature or below until it is used.

2. Dry Condensed Milk:

Dried milk contain all, part, or none of the fat originally present in the milk. In the bakery, the product usually used is non-fat dry milk solid (referred to hereafter as DMS). Two types of DMS are produced. One, for confectioners is not given any special heat treatment. The

second, intended for use in yeast - raised bakery products, is preheated to high temperature to improve its baking quality.

Manufacture:

The first steps in the manufacturer of DMS are the same as for evaporated milk. That is, the milk is usually condensed in vacuum pans. If the DMS is intended for the baker it is preheated at 185°F to 190°F for about 30 minutes. Without this treatment milk has harmful effects on yeast - raised doughs and the baked products. Following preheating and condensation, the milk may be dried by one of the following processes.

I. Roller Dried, or Drum Dried Milk

In this processes, either fluid or condensed milk is fed into a reservoir, formed by two drums about 0.02 inch apart and are closely fitted at end of dams. The drums are steam heated and rotate in opposite directions. As they turn they pick up a thin film of liquid milk which dries rapidly and is scraped from the surface, ground and bolted.

Because the milk is heated to about 200°F during drying, it is only about 80% solution in water.

In a modification of this process the drums are enclosed in a chamber with a relatively high vacuum. This causes the milk to dry at a lower temperature, usually below 150°F, Because of the low temperature drying the DMS is more soluble than "atmospheric" roller dried milk described first. "Vacuum" roller dried milk is about 97% soluble because the lactalbumin not coagulated.

ii. Spray Dried Milk

Condensed milk is sprayed into a moving stream of heated air within an enclosed vessel. The moisture in the milk is evaporated rapidly and dry milk falls to the bottom as a fine powder. It is 100% soluble in water. DMS prepared by any one of these processes, is suitable for use in bakery products if properly heat-treated before drying. The solubility of the products is of no importance, unless the DMS is reconstituted to fluid milk before it is used.

Storage of Dried Milk

- Powdered milk should be stored in a clean, dry room, free from odors and kept covered until used. Powdered milk, preferably should be emulsified before use. Some incorporate it mixed with the dry ingredients in sponges.
- Dry whole milk should be kept in a dry, cool place, and it is well to remember that this product keeps only a few weeks.
- Non-fat dry milk solids (DMS) does not require extreme care in storage. It has good keeping qualities. However, reasonable care should be used, and it should be stored in a dry place which is free from off-odors.

Exercise:

a. Prepare a chart with the list of different types of milk, the byproducts of milk and their uses.

- Submit the chart to your teacher for assessment.

Review Questions:

A. Fill in the blanks:

1. Milk is an emulsion of_____and_____.
2. The milk protein is known as_____.
3. Milk improves_____colour in bread.
4. The milk sugar is known as _____.
5. Milk has maximum mineral contents in terms of_____and_____.
6. Milk should be stored at _____deg F.

B. State whether true or false:

1. Condensed milk can be made with the liquid milk.
2. Non fat dry milk solids do not require extreme care in storage.
3. Milk does not have any vitamin in it.
4. Lactose is 16 %as sweet as sucrose.
5. Milk contains 20 % protein in it.

C. Questions:

1. Explain the process of making the liquid milk into the dry milk powder.
2. Write short note on the constituents of milk.
3. Describe the details about storage of milk.

3.3 EGGS

Eggs are very important and costly ingredient of bakery products especially of cakes and rich sweet doughs. In fact, they represent 50 percent or more of the cost of the ingredients used in cake production.

Kinds of Eggs Available:

1. Fresh Eggs
2. Liquid Eggs
3. Frozen Eggs
4. Dried Egg

Eggs may be further classified into:

1. Whole Eggs
2. Egg Yolks
3. Egg Whites

Fresh Egg: refers to eggs that have recently broken, or separated from the shell and placed in cans, these are usually preserved by freezing.

Frozen egg: The eggs are quick frozen at -10 °F to -15 °F and may be stored for a long periods at 0 °F or below without spoiling.

Dried Egg: Eggs are dried by spraying into a heated chamber (160 - 170°F), the moisture is almost completely removed.

Soya Flour: Can replace eggs - can use 30% based on flour.

Composition:

The composition of eggs is shown in the following

Average composition of eggs:

Sr. No.		% whole egg	% yolk	% white
1.	Moisture	73.0	50.0	86.0
2.	Protein	14.0	17.0	12.0
3.	Fat	12.0	31.0	0.2
4.	Sugar (as glucose)	0.0	0.2	0.4
5.	Ash	1.0	1.5	1.0

Whole Egg: In calculating the amount of eggs to be used in a recipe or formula, one can assume that the whole egg is approximately 75 percent moisture, the remainder being solids.

Yolk: The yolk of egg contains most of the fatty material in a finely emulsified state. The approximate amount of lecithin fat in the yolk is 7 - 10% of total fat content.

Yolks are used for improved creaming, greater volume etc. Although the yolk appears to be almost semi-solid, it contains almost 50% water.

Egg White: Egg white contains approximately 86% moisture. The whites are either firm or fluid in nature. The whites close to the yolk are generally firm, while the portion closer to the shell is fluid.

Functions of Eggs in Bakery Products:

1. **Increase Nutritive Value:**

   Eggs are high in nutritional value and their use in baked goods improves the value of these products as food. Eggs are an important source of the necessary minerals iron, calcium and

phosphorous. While milk is rich in calcium and phosphorous, it is low in iron. Iron exists in very small quantities in most foods, but egg yolk contains a relatively large amount in a form which the human body can assimilate readily. Egg protein is a complete protein, capable of supplying all of the essential amino acids required to maintain growth and good health. Both the protein and the fat, which is in the yolk, are of a nature to be readily assimilated by the body. In addition, eggs supplie important amounts of vitamins A and D, thiamine and riboflavin.

2. **Improve Flavour, Texture and Eating Quality:**

   Eggs have an odor which some people consider desirable in the baked products.

3. **Aid in Producing an Appetizing Colour in Both Crumb and Crust:**

   The yolk of the egg provides the desirable yellow colour which gives the cake a rich appearance.

4. **Acts as a Binding Agent to Hold the Various Ingredients Together:**

   Example - custards

5. **Aids in Leavening, Especially in Products Such as Angel Food:**

   The foam from whipped or beaten eggs entraps air bubbles which expand when heat is applied. In the mix, they improve creaming, increase the number of air cells formed and coat these cells with a fat which permits further expansion of the air cells. In baking, the air cells expand further and the partial evaporation of moisture in the form of steam, increases leavening. When whipped, as for sponge cakes, the foam formed by the eggs affect the leavening.

6. **Contributes Emulsifying Action:**

   Example - lecithin in yolk

7. **Produces a Shorter Crumb:**

   Because of the fat and other solids of the eggs, the product had additional fat and tastes sweeter. Eggs also provide shortness in the mix, enabling the mix to be handled easily.

8. **Improves Keeping Quality:**

   Because egg contains 75% moisture and natural ability to bind and retain moisture, they retard staling. This is especially true of products made with additional yolks.

Use of Eggs in Bakery products:

Shell eggs, both fresh and cold storage, are sometimes used in bakery product. Dried eggs are also used and their usage is increasing (See later section). By far the largest amount is in the form of frozen eggs. Frozen eggs are sold as whole eggs, whites and yolks. In frozen whole eggs, the proportion of yolk and white may differ from the of shell eggs - for often frozen whole egg is "fortified" by addition of yolk.

1. Egg Acts as a Leavening Agent:

When egg white is beaten, the foam consists of many small air bubbles each surrounded by a film of egg protein. The ability of egg white to foam is due to its low surface tension which results in a concentration of solids at the surface. The mechanical action of beating and contact of the thin protein film with air, partly coagulate the protein and make the foam stable. On baking, the air bubbles expands with heat and the protein film is sufficiently elastic to stretch. As the batter or meringue reaches higher temperature, the protein coagulates entirely, losses its elasticity and sets to a firm structure.

The volume and stability of egg white foams are influenced by a number of factors. The more viscous or thick the egg white is the longer it takes to form a foam, and the lower will be the volume. On the other hand, the stability of the foam is somewhat greater. This effect may not be due to the egg so much as to the fact that thick egg white may not be carried along by the beater instead of mixing readily. The demand of thick egg whites is probably due to the fact that in the case of shell eggs, the ability of the white of a freshly cracked egg to stand high when it is poured on a plate is an indication of freshness. In old eggs the white has thinned out, and flows more readily. Obviously, in frozen or dried eggs, which are thoroughly mixed or beaten before processing, this test has no meaning.

Other factors which influence the volume and stability of the foam produced by egg white are the presence of salt, sugar and acid and the conditions under which the white is beaten. Salt and sugar, within certain limits of concentration, stability by bringing the protein to its iso-electric point where it coagulates more rapidly. This is the reason for using such acid ingredients as cream of tartar, calcium acid phosphate or lemon juice in a meringue. Salt and acid stabilizers are most effective when added at the foaming stage, early in the process. Sugar has its greatest effect also, when added at this stage, but lengthens the time required for beating.

Egg white of good quality should be entirely free from fat of any kind. The presence of fat results in a foam of low volume, fine structure and low stability.

Since surface tension is lowered with raise in temperature, egg white whips more rapidly at room temperature than when cold. The type of beater affects the foam also. If it is too coarse, the foam will have large bubbles and will be less stable.

When egg yolk is whipped both the kind of protein it consists of and presence of the large amount of natural fat which it contains give the foam low volume, a fine structure, and less stability than egg white when cold. However, egg yolk has good emulsifying properties which aid in incorporating the other ingredients, and in keeping fat particles dispersed in a batter. As stated above, the properties are due to the presence of lecithin, a natural constituent of yolk. On baking, yolk coagulates to more stable and firm structure than the white, and forms a structure with thinner cell walls.

Grading of Eggs:

Quality is indicated by the grade, and is not related to size. The USDA provides a grading service for shell eggs, and their official grade shield certifies that the eggs have been graded for quality under Federal/State supervision.

In some states, eggs may also be graded by a licensed plant, without a federal inspector present. This grade should be equivalent to a USDA grade, but will not appear in a USDA shield. The grade indicates that eggs have come from a processing plant which has been inspected and approved by state official for general sanitation, proper grading, and sizing practices.

The grades, which are AA (Fresh Fancy), A and B are determined by the interior and exterior quality of the egg.

1. **Shell colour:**

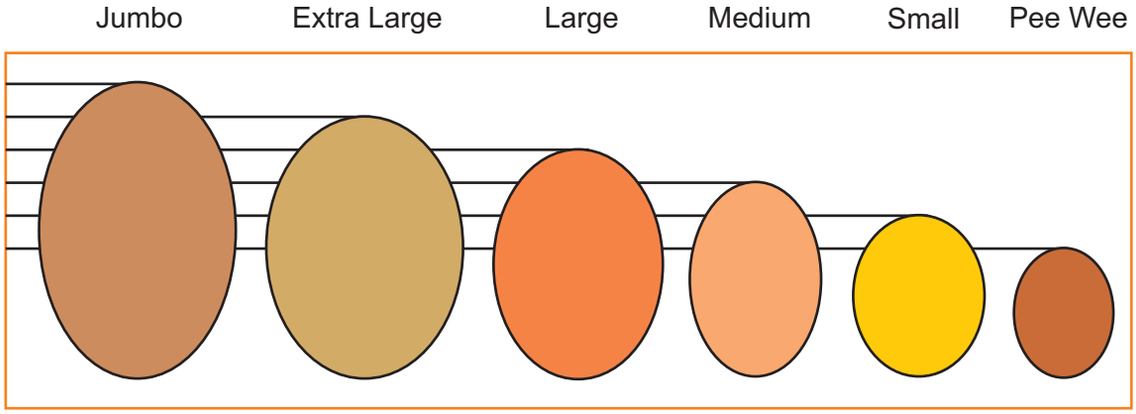
   Shell colour, either white or brown, is determined by the breed of the hen, but does not affect the quality, cooking properties or nutritive value of the egg.

2. **Yolk colour:**

   Spots in the yolk, either blood coloured or dark brown, do not affect the flavour or nutritive value. If desired, they can be removed before using the egg. Yolk colour depends on the feed of the hen, and does not alter the nutritive value of the egg. Darker yolks will add extra colour to dishes containing them.

3. **Egg Size Equivalency:**

   Egg Size:



	Jumbo	Extra Large	Large	Medium	Small	Pee Wee
Min. Wt. Per Doz.	30 oz	27 oz	24 oz	21 oz	18 oz	15 oz
Min. Wt. Per 30Doz. Case	56 lbs.	50½ lbs.	45 lbs	39½ lbs	34 lbs	28

Exercise:

a. Prepare a chart with the list of different types of egg used for consuming as food. Also list down the uses of different eggs in bakery department.

- Submit the chart to your teacher for assessment.

Review Questions:

A. Fill in the blanks:

1. Eggs have _____ nutritive value.
2. Yolk of egg contains _____ %of fat content.
3. Eggs can be replaced by _____ flour.
4. Whole egg has _____ %moisture in it.
5. In custard eggs act as _____ agent.

B. State whether true or false:

1. Eggs when fresh are good for whipping.
2. Eggs can be frozen at -10 deg. F.
3. Whole egg has 14% of protein.
4. There is no sugar present in eggs.
5. Eggs dose not provide colour to the product.

C. Questions:

1. Describe in detail about the function of egg in bakery production.
2. How egg acts as a leavening agent?
3. Why frozen eggs have become popular? How it is made?

3.4 WATER

Water is the most important and the most plentiful of all compound substances. The ocean covers about three-fourths of the surface of the earth. The air always contains of water vapor. Water is the most essential part of food, and the most essential ingredients of bakery products.

Source of water:

1. **Marine Water:** salt water of oceans, seas and lakes without outlets.
2. **Deep Earth Water:** from volcanoes and geysers.
3. **Natural Water:** rain or snow, streams, wells.

There are two types of natural water:

a. **Surface Water:** rain or snow, streams, lakes.

b. **Ground Water:** water seeps through the ground, which are:

   1. Shallow wells and springs
   2. Deep wells
   3. Artesian wells

Source of Minerals:

Natural water from rain, snow and surface water in seeping through the soil comes in contact with products of decomposition and decay. It absorbs carbon dioxide from the air to form carbonic acid.

$$H_2O + CO_2 \qquad H_2CO_3$$

Other acid forming materials may also be absorbed. The percolating water containing these acids decomposes feldspar (silica rock), limestone (Carbonate rock) etc.

The less contact water has with the soil the lower the amount of minerals dissolved, when water flows for great distances, underground or comes from deep wells, the opportunity for the higher soluble minerals will be found.

Function of the Water in Bakery Product:

1. Make possible gluten formation.
2. Controls the consistency of the dough.
3. Assists in the control of dough temperature (warming or cooling it).
4. Dissolves salt; suspends and distributes non-flour ingredients.
5. Wet and swell starch; renders it digestible.
6. Make possible enzyme activity.
7. Keep bread palatable longer if sufficient water is allowed to remain in finished loaf.

Exercise:

a. Prepare a chart showing the different uses of water in the confectionery and which type of water is suitable for the use in the cooking.

- ❀ Submit the chart to your teacher for assessment.

Review Questions:

A. Fill in the blanks:

1. Water is the most _____ part of food.
2. Water helps to form _____ in flour.
3. Water helps to _____ salt.
4. Natural water is of _____ types.

B. Questions:

1. What are the different sources of water?
2. Describe the two types of natural water in brief.
3. List down the different functions of water in bakery products.

Chapter–4

UNIT–4: FATS AND OIL

4.0 Unit Overview & Description

- Overview
- Knowledge and skill outcomes
- Learning outcomes
- Assessment Plan

4.1 Introduction to Fats and Oils

4.2 Composition of Fats and Oils

4.3 Functions, Types and Storage of Fats and Oil in Confectionery

4.0 UNIT OVERVIEW & DESCRIPTION

Overview:

This unit will provide the student information about the different types of fats and oils used in the Confectionery. It will help to understand the fats and oils for Confectionery, their applications and uses in the Confectionery.

Knowledge and skill outcomes:

i. Understand the introduction of fats and oils in the Confectionery.

ii. Know about storage of fats and oils.

iii. Know about uses of fats and oils.

Resource Materials:

i. Gisslin, W. *Professional baking.* New York: John Wiley & Sons, c1985.

ii. Sultan, W.J. *Elementary baking.* New York: McGraw-Hill, c1969.

iii. Sultan, W.J. *Practical baking. 5th edition.* New York: Van Nostrand Reinhold, c1990

Learning Outcomes:

UNIT–IV: Fats and oils	
4.1 Introduction to Fats and Oils	❀ General Overview
4.2 Composition of Fats and Oil	❀ To make the awareness about composition of Fats & oil used in Confectionery. ❀ To know about manufacturing of fats & oil
4.3 Functions, Types and Storage of fats and Oils in Confectionery	❀ The students should be able to understand and the uses of fats & oil in different Confectionery products

Assessment Plan: (For the Teachers)

Unit-4	Topic	Assessment Method	Time Plan	Remarks
3.1	Introduction to Moistening Agents	Question & Answer		
4.2	Introduction to Fats and Oils	Question & Answer		
4.2	Composition	Question & Answer		
4.3	Function, Types and Storage of Fats and Oils	Question & Answer		

4.1 INTRODUCTION TO FATS AND OILS

Fats are usually regarded as constituents in the food which are greasy in texture and are Solid at room temperature whereas Oils are Liquid at room temperature. Fats and Oil impart a rich texture and pleasant eating quality to the cake and increase the food value.

4.2 COMPOSITION OF FATS AND OILS

Fat is used to prepare most of the bakery products except a few, like sponge cake. Fat is also known as shortening. However, the quality of fat may vary from the type of products, i.e. :

- Bread contains hardly 2 to 10%
- Other yeast raised products may contains 15 to 30%
- Puff pastry 60 to 100%
- Cakes and pastries 80 to 120% (on the flour bases)

Oils and fats embrace a very wide range of substances and because of the importance part they play in bakery operations. It is essential to know about their chemical and physical aspects.

The fats and oils are organic substances insoluble in water but soluble in organic solvents like chloroform, ether and benzene. Baking fats are mixture of glycerides, which can be breakdown into glycerin and fatty acid. These substances are basically made up of Carbon, Hydrogen and Oxygen with different formulations and structure. Fatty acid has general formula $CH_3(CH_2)_nCOOH$.

C + H + O (with different formulation) = (fatty acid)

Glycerin + Fatty acid = Glycerides

$(Glycerides)_n$ = Fat

Stearin being hard in nature, provides firmness to fat, hence the intensity of fat hardness directly proportionate to the quantity of stearin present. This has been taken advantage in the production of wide range of hydrogenated fats and cake margarines for the convenience of handling by the confectioner.

Strictly speaking, there is no chemical difference between fat and oil. If a substance of this class is liquid at the ordinary temperature [15ºC(59ºF)] it is termed as oil, while if it is solid under the same conditions it is termed as fat.

Oil obtained from the food material and earth is known as edible oil and mineral oil respectively. Edible oil possess the characteristics like:

- It breaks down into fatty acids and glycerin.
- It generates heat and energy on digestion.
- It produces soap when reacted with caustic soda (sometimes observed in cake).
- While the mineral oil does not possess any of the above characteristics.

Production and Processing:

There are few production methods to obtain crude oil from different origin, that is further processed to obtain clear oil, or fat. It is further converted into shortening, margarines, frying fat etc. for large scale uses. The process is illustrated below:

Pressing or expelling seeds to and solvent extraction oil, type the solvents extraction of oil solvent for reuse. used to obtain oil ⇩	⇨	Partially cook or crack the plant melt the fat for easier release of generally by continuous screw mechanical presses. Percolate like hexane for complete from seed. Distill the (This process is generally from plant seed).
Rendering ⇩	⇨	Heat the meat scrap to melt the fat. Separate the floating fat by skimming or centrifuging. (This process is generally used to obtain oil from animal origin like hogs, tallow, whale blubber, fish tissues etc.) Oil obtained is termed as crude oil.
De-gumming ⇩	⇨	Mix water with oil, which combines gummy substances like phospholipid and makes insoluble material in fat and settles down (This is the way to obtain phospholipids lecithin)
Refining ⇩	⇨	Add alkali solution, which combines minor impurities like fatty acid and makes soap this being insoluble in oil settles down and can be removed by filtration.
Bleaching ⇩	⇨	Heated oil passes over on charcoal or various absorbents clays and earths to remove plant pigments (like chlorophyll and carotene) that make the oil colourless.
Deoderization ⇩	⇨	Inject steam into the fat in low pressure evaporators to remove disagreeable odors of oils seeds. The oil obtained may be used for the human consumption. However, it may be further processed for specific use.

Hydrogenation ⇩	⇨	Whip de-aerated hot oil with purified hydrogen gas under pressure in the presence of activated nickel as a catalyst in a closed vessel. ❀ This product is popularly known as *Vegetable Ghee* and widely used for preparation of bakery products and sweets.
Wintering ⇩	⇨	Set barrels of oil in a cold room at selected temperature or cool by controlled heat exchanger. It will crystallize and settle down the tryglycerides, containing more saturated fatty acids. They are removed to obtain liquid phase. ❀ This type of oil is useful to prepare salad oil.
Plasticizing and Tempering ⇩	⇨	Pump the melted fat or oil through a tubular scraped surface type exchanger for super cooling and then through a second chilled cylinder provided with high shaft containing row of pins that alternate with pins on the cylinder wall to provide intensive agitation. For some applications, controlled degree of aeration by means of air or nitrogen also introduced prior to chilling. The degree of temperature, speed of chilling, agitation etc. alternate the quality. This process is known as Plasticizing. After that, fat is stored for about 2 to 4 days at 26.6ºC (80ºF) to stabilize the properties developed by plasticizing. It is known as tempering.
Mono and Diglyceride preparation ⇩	⇨	Heat [at (205ºC) 400ºF] the mixture of triglycerides and glycerol (1/5 to weight of triglycerides) in the presence of NaOH under inert gas or vacuum. ❀ Mono and diglycerides are added to shortening and other food products for emulsification purpose.

Process of lard:

Previously lard was obtained by dry rendering process, but such lard possesses objectionable cooked flavour; hence wet rendering process has replaced it. The process is:

Heat the fatty tissue ⇩	⇨	in the presence of moisture. Under vacuum at lower temperature.
Filtration ⇩	⇨	to remove foreign bodies.
Steam stripping ⇩	⇨	
Prime steam lard ⇩	⇨	it is a completely bland product

Little difference in production yields different types of lard.

i.e.:

- Prime steam lard : Commercial important
- Kettle-rendered lard : It has noticeable cooked flavour and slightly dark colours.
- Leaf lard : Firmer in consistency and distinct in flavour hence limited use
- Neutral lard : Possess mild falvours and produced in very less quantity

Pure lard has a:

- Firm consistency
- Granular texture
- White colour
- Agreeable flavour

Lard is composed chiefly of:

- Three glycerides - Olein, Palmitin, Stearin (olein is predominant)
- Nitrogenous compounds
- Mineral salts
- Moisture

It contains 92 to 95% fatty glycerides.

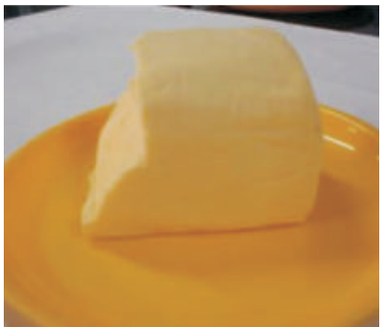
Process of Butter:

Butter is obtained through churning the ripened cream of milk. The churning process causes the fatty globules to coalesce and form granules. When the fat is formed, it is well worked together with wooden spatula as to remove the buttermilk and make it into a homogeneous mass. It is a common practice to add little salt and colouring matter for preservation and maintain consistent yellow hue in the finished butter, respectively.

It should not be touched by hand during churning or packing, otherwise it may become contaminated with bacteria and lose its keeping quality.

Composition of Butter:

Structurally, butter is considered an emulsion that consists of a continuous phase or matrix of plastic fat in which liquid fat globules, fat crystals, moisture droplets, casein particles and air cells are dispersed, with lactose and salt(if added) dissolved in the aqueous phase .



The advantage analysis of butter is:

S. No.	Particular	Quantity
1.	Fat	80.47%
2.	Moisture	16.34%
3.	Salt	02.35%
4.	Curd or Casein (Including protein, mineral, lactose etc.)	00.84%
5.	Phosphatides (Calculated as lecithin)	00.20%
6.	Air (by volume)	1 to 5%

Process of margerine:

Melt the fat at 46º to 49 ºC (115º to 120ºF) ⇩	⇨	Previously oleo oil used, which is replaced by neutral lard. Now-a-days hydrogenated vegetable oils are used.
Mix into emulsion with or reconstituted skimmed milk ⇩	⇨	The milk is already ripened with fresh selected bacterial culture to impart a buttery flavour.
Add lecithin or other surface active agent such as monoglycerides ⇩	⇨	To improve emulsifying properties of margarine. ❀ Sometimes colour and vitamin A & D is also added.
Solidify ⇩	⇨	Pass the liquid on cool drum. Collect the scrap, keep in a tank for few hours, remove excess water to obtain butter consistency

Salt addition ⇩	⇨	At 2.5 to 3% level
Packing ⇩	⇨	

Classification:

Commercially available margarine is generally classified, according to their varying plastic properties, into:

- ❀ Table margarine : It is softer in consistency and melts at body temperature.
- ❀ Cake type or Baker : It is also quite soft but possesses superior creaming margarine quality.
- ❀ Roll-in margarine : It is of somewhat firmer and somewhat waxy consistency.
- ❀ Puff paste type : It has more firm and waxy characteristics as a compared margarine to roll-in margarine.

The latter two types of margarine have extended plastic ranges and relatively high melting points, which render them suitable for rolling out into smooth, continuous sheets between dough layers, which help in production of puff and Danish pastry.

Puff Pastry Fats: These fats must form very thin, continuous layers to serve as a film like separation between rolled dough sheets and thereby prevent their coalescence. Therefore, they must possess a broad plastic range and a tough, waxy texture with good extensibility to meet the exacting requirements.

Exercise:

a. Collect the different labels of fats and oil and check for the composition mentioned there on the label. Label them in the notebook.

- ❀ Submit the assignment to your teacher for evaluation.

b. Prepare a chart of the different composition of fats and oil and mark the examples of each in the chart.

- ❀ Submit the chart to your teacher for assessment.

4.3 FUNCTIONS, TYPES AND STORAGE OF FATS AND OIL IN CONFECTIONERY

Functions of fats and oils

a) Fats and oil has a lubricating effect by forming a film on gluten strands which makes the product tender

b) The shortening helps to incorporate air during the creaming operation when the fat entraps air in the form of minute air cells and bubbles ,which gives volume while baking

c) The stabilizing function of fat helps to prevent their collapse during the baking operation.

d) Fats and oils imparts shortness and tenderness to the baked products and improves the eating quality

e) Fats and oils improves the self life of the products like cakes remain soft for longer time than bread because of more fat in cakes.

f) Fats and oils improves the crumb textures of the baked products

g) During the metabolic process of digestioin, the fat breaks down into calories and provides energy.

Storage of fats and oils

a) Always store fats and oils in a clean, cool and dry place

b) Store them away from the heat source

c) Always use clean and neat utensils to take out the product from the container.

d) Avoid storage of bulk quantity of fats and oils.

Types of fats

1. Lard
2. Butter
3. Margarine

Types of oils

1. Vegetable oils
2. Olive oil

Review Questions:

A. Fill in the blanks:

1. Butter is obtained from _____ by the churning method.
2. Oil obtained from the _____.
3. _____ converts the oil into shortening.
4. Butter contains _____ % fat in it.
5. lard is obtained from _____.

B. State whether true or false:

1. Margarine is used as the substitute of oil now a days.
2. The cream of milk is used for making of butter.

3. There is no chemical difference between fats and oil.

4. Water is used while making of butter.

C. Questions:

1. Name the different fats and oil.

2. Differentiate between fats and oil.

3. Define hydrogenation.

4. Classify different types of margarine used.

5. Write down the process of making butter.

6. Write about the process of making lard in the industry.

Chapter–5

UNIT–5: LEAVENING AGENTS

5.0 Unit Overview & Description

- Overview
- Knowledge and Skill Outcomes
- Learning Outcomes
- Assessment Plan

5.1 Introduction to Leavening Agents

5.2 Importance of Leavening Agents

5.3 Types of Leavening Agents

5.0 UNIT OVERVIEW & DESCRIPTION

Overview:

This unit will provide the student information about the importance of leavening agents in the Confectionery. It will help to understand the requirements for leavening in Confectionery production.

Knowledge and skill outcomes:

i. Understand the concept of leavening and importance of it.

ii. Know about the different types of leavening.

iii. Know about why aeration is achieved in Confectionery

Resource Materials:

I. Gisslin, W. *Professional baking.* New York : John Wiley & Sons, c1985.

ii. Sultan, W.J. *Elementary baking.* New York: McGraw-Hill, c1969.

iii. Sultan, W.J. *Practical baking. 5th edition.* New York : Van Nostrand Reinhold, c1990

Learning Outcomes:

UNIT–V: Leavening agents	
5.1 Introduction to Leavening Agents	❀ General Awareness
5.2 Importance of Leavening Agents	❀ To learn about the leavening. ❀ To know the uses of leavening in different products.
5.3 Types of Leavening Agents	❀ Having knowledge of the different types of leavening agents.

	❀ Finding the chemical leavening agents. ❀ To find biological leavening agents.

Assessment Plan: (For the Teachers)

Unit-5	Topic	Assessment Method	Time Plan	Remarks
5.1	Introduction to Leavening Agents	Question & Answer		
5.2	Importance of Leavening Agents	Question & Answer		
5.3	Types of Leavening Agents	Question & Answer		

5.1 INTRODUCTION TO LEAVENING AGENTS

Any process by which dough or batter is filled with gas holes, which are retained upon baking, is a leavening process.

5.2 IMPORTANCE OF LEAVENING AGENTS

The major function of leavening agents is to aerate the dough or batter and thereby result into a light and porous texture. This porosity of a batter or dough is responsible for imparting good volume to the finished product.

Some of the advantages of leavening of bakery products are as under:

1. It increases the volume of the bakery products.
2. The leavened products being light and porous are easily chewed and digested
3. Leavened bakery products are more palatable and appetizing than those made without leavening, which may be due to uniformity of cell structure, brightness of crumb colour, softness of texture, etc.

Exercise:

A. Visit a retail shop or departmental store and identify the different types ingredients available which can be used as leavening/ aeration label them in the notebook.

❀ Submit the assignment to your teacher for evaluation.

B. Prepare a chart showing what is leavening means in making of a product through pictures relevant to it.

❀ Submit the assignment to your teacher for evaluation.

Review Questions:

A. Fill in the blanks:

1. When the volume _____ it is called leavening.

2. Through leavening the texture becomes _____ in baked products.

B. State whether true or false:

1. Leavening/aerating is not important for a baked product.
2. Aerated product can be easily chewed and digested.
3. Leavened product has non uniform cell structure.

C. Questions:

1. What is the importance of leavening/aerating?
2. What is the result in the properties of a leavened product? Explain.

5.3 TYPES OF LEAVENING AGENTS

The leavening of bakery products could be brought about by the following four general ways:

1. Mechanical (aeration)
2. Biological (fermentation by yeast)
3. Water vapour
4. Chemical

1. Leavening by Mechanical Way:

During mechanical aeration there must be some ingredients in the mix that will hold the air bubbles and not allow them to escape. This is normally brought about by proteinous substances such as egg, egg white (albumen) or gelatin. Examples of products of this method are the production of marshmallow and icing (royal).

Another method of mechanical aeration is in the layers of dough with an insulating material in between. In such cases a dough is used with well-developed gluten present. When the biscuit enters the oven the water in the dough layer is converted to steam and expands, lifting the layers . Examples of such leavened products are crackers and puff biscuits.

There are two commonly followed mechanical ways by which the air is incorporated in dough or batter, viz., (a) creaming, and (b) beating/whipping.

a) **Creaming:** During creaming process the air is entrapped into the shortening which expands when heated during process. Thus gives volume to the bakery product.

The pound cake is an example of this process, wherein none of the chemical leaveners are used.

b) **Beating/Whipping:** When egg whites are beaten or whipped they become fluffy and foamy because of the whipped-in air. This air incorporated during whipping of eggs, expands while the batter is being baked and causes the cake to rise. Sponge cake is example of cakes leavened by this manner.

2. Leavening by biological way:

The yeast used in the preparation of the fermented bakery products (like bread, bread rolls, sweet doughs, crackers etc.) does the job of leavening by biological way. Here carbon dioxide gas is generated by fermentation. The one best adopted for leavening of bakery dough is baker's yeast. Sugars such as glucose and fructose are substrates ,which are transformed into carbon-di-oxide and ethyl alcohol by fermentation. A simplified equation describing this fermentation reaction could be written as:

$$C_6H_{12}O_6 \longrightarrow 2C_2H_5OH + 2\,Co_2$$

Glucose/Fructose Ethyl alcohol Carbon-di-oxide

This carbon-di-oxide is responsible for the leavening of bakery products. The advantages of yeast leavening, as opposed to chemical leavening, are that it can contribute a characteristic taste and aroma and the evolution of gas can continue over a much longer period of time.

3. Leavening by Water Vapour:

Water used in bakery formulations either in the visible form (pure water) or invisible form (as moisture in ingredients like milk, egg, syrups, etc) changes to water vapour as the temperature of a cake batter or bread dough rises during baking operation. It is also true that unless the consistency of batter or dough is adjusted properly, the chemical leaveners alone cannot do their work efficiently. Because the stiff dough or batter does not rise much and the loose dough or batter cannot retain the expanding gases thus causes collapse resulting into lower volume.

4. Leavening by chemical Way:

Some of the commonly used chemical leaveners are:

a) Baking soda

b) Ammonium bi-carbonate

c) Baking powder

a) **Baking Soda:** The chemical name of baking soda is sodium bicarbonate and has the chemical formula NaHCO3. It is also known as 'bicarbonate of soda'.

During baking process it liberates carbon-di-oxide, a leavening gas. The chemical reaction of gas formation is as follows:

$$2\,NaHCO_3 \longrightarrow Na_2CO_3+CO_2+H_2O$$

Baking soda also liberates carbon-di-oxide gas when it is mixed with acidic substances like sour milk, buttermilk. The washing soda being alkaline increaser the pH of the cake batter and thus enhances the rate of caramelization of sugar, giving darker crust colour. The liberation of carbon di-oxide gas from pure solutions of baking soda is slow, especially near room temperature. When baking soda is added to dough or batter, gas liberates at least initially. In the absence of added acids, the dough pH quickly becomes

alkaline and gas production decreases. The popularity of sodium bicarbonate as a gas source is based on its low cost, lack of toxicity, ease of handling and easy availability.

b) **Ammonium Bicarbonate:** Ammonium bicarbonate is used rather extensively in cookies and in bakery products that are baked almost to dryness. During baking process it decomposes completely into gases like ammonia, carbon-di-oxide and water vapour. In other words, ammonium bicarbonate is called volatile salt. The chemical leavening reaction of this salt could be written as under:

$$NH_4HCO_3 \longrightarrow NH_3 + CO_2 + H_2O$$

Use of slight excess can completely break down the structure of the biscuit or cookies.

c) **Baking powders:** Baking powder is a chemical leavening agent produced by blending a water soluble sodium bicarbonate (baking soda). One or more acid reacting ingredients with or without any filler, such as starch, calcium carbonate or flour.

Baking Powder = Sodium Bicarbonate + One or more acid reacting material + Inert filler (starch, calcium carbonate or flour) (25-30% variable)

If sodium bicarbonate alone is heated, only half the total amount of carbon-di-oxide is released, If an acid ingredient is used to react with the sodium bicarbonate (an alkaline salt), all the carbon-di-oxide is released and there is no noticeable action on the gluten or on the crumb colour. In this way, there is a considerable yield of carbon-di-oxide for aeration. Secondly, it will also neutralize the washing soda (Na_2CO_3 which forms on decomposition of baking soda).

Since the acid-alkali reaction (taking place between constituents of baking powder) does not take place until both soda and acid ingredients are in solution, one of the acids ingredient should not be soluble, except in warm or hot water. Sodium bicarbonate is an alkaline salt which is soluble in cold water. It follows, then, that a suitable acid ingredient should be used which does not dissolve during baking operation.

The several acid ingredients used in the preparation of various types of baking powders are:

1. Tartaric acid
2. Citric acid
3. Cream of tarter
4. Acid calcium phosphate
5. Sodium acid pyrophosphate
6. Mono sodium phosphate
7. Glucono-delta lactone

The chemical reaction between sodium bicarbonate and some of the selected acid ingredients is shown below:

1. Tartaric acid (molecular weight is 150)

$$H_2C_4H_4O_0 + 2NaHCO_3 \longrightarrow Na_2C_4H_4O_6 + 2H_2O \; 2CO_2$$

(150) (168)

2. Cream of tarter (molecular weight is 188 grams)

$$KHC_4H_4O_6 + NaHCO_3 \longrightarrow K.NaC_4H_4O6 + H_2O + Co_2$$

One can say that for making baking powder the proportion of sodium bicarbonate and tartaric acid should be 112:100 so that the neutralization reaction will be complete. And secondly, none of these two components of baking powder is found as residue at the end of the reaction, thus, there will not be much effect on pH of the batter/dough and saponification reaction too can not take place.

Below stated table gives information about speed of reaction and the neutralization values of various acid ingredients used in the preparation baking powders.

Sr. No.	100 grams of soda required for complete reaction (neutralizing value)	Weight of baking	Speed of reaction
1.	Tartaric acid - $H_2C_4H_4O$	112	Fast
2.	Cream of tarter - $KHC_4H_4O_6$	44	Fast
3.	Monocalcium phosphate monohydrate - $Ca(H_2PO_4)_2$; H_2O (A.C.P./M.C.P)	80	Fast
4.	Anhydrous Monocalcium Phosphate - $Ca(H_2PO_4)_2$	83.5	Fast
5.	Sodium acid pyrophosphate - $Na_2H_2P_2O_7$	74	Slow
6.	Sodium aluminium sulfate Na_2SO_4; $Al_2(SO_4)_3$	104	Too Slow
7.	Sodium aluminium phosphate - $NaH1_4Al_2(PO_4)_8$	100	Slowest

The so called fast-acting baking powders release most of the gas during the first few minutes of contact with liquid. The slow-acting baking powders release practically none of their gas at low temperatures, requiring the heat of the oven to effect complete reaction. The so called double acting powders, react partly at low temperatures to release gas for a smooth flowing batter, but require higher temperature for producing major amount of gas. Double acting baking powders are considered as the best baking powders as they release part of gas during bench operating, i.e. (mixing, creaming, etc; which facilitates handling, (panning) and weighing operation of the cake

batters, but they release major amount of gas during baking operations which helps in increasing the volume of the bakery products.

Use of filler in baking powders:

Various types of fillers such as edible starches like maize starch, tapioca starch, rice starch, wheat starch, arrowroot starch, potato starch, sorghum starch or other neutral materials such as calcium lactate, sodium sulphate, calcium carbonate, hydrated silicate work as neutral medium and thereby do the below stated functions.

1. To keep the soda particles and the acid particles from intimate contact (partition effect) and thereby minimizing the possibility of premature action (minimizes gas evolution during storage).
2. Acts as an absorptive medium for free moisture incorporated into the powder during manufacture on assimilation in the course of storage.
3. To facilitate handling and measuring in actual use as it keeps it into powder form (lump formation avoided).

   Pure white, redried corn starch meets all the requirements of a good filler and is the one usually used.

Storage of baking powder:

All baking powders deteriorate with age and if kept for any considerable length of time lose their strength because they absorb some moisture from the air and slowly gives off gas. Furthermore, in such cases, the baking powder may become 'caked' or lumpy-thus making it difficult to mix in uniformly with flour.

Therefore, it is advantageous to use the freshest possible baking powder, and to see that it is kept under the proper storage conditions which could be as follows:

1. Clean and dry room.
2. Keep can tightly covered when not in use
3. Avoid having a large amount of baking powder on hand, which must be stored for a considerable time.

Exercise:

A. Visit a retail shop or departmental store and identify the difffrent types of chemical leavening agents available and label them in the notebook.

   ❀ Submit the assignment to your teacher for evaluation.

B. Prepare a chart of the different types of leavening agents and mark the examples of each in the chart.

   ❀ Submit the assignment to your teacher for evaluation.

Review Question:

A. Fill in the blanks:

1. _____ is the leavening agent used in biscuit making only.
2. _____ is the biological leavening agent.
3. _____ is known as giving volume to any bakery product.
4. Baking powder is the combination of _____ and _____.
5. Creaming is the example of _____ leavening.
6. Baking soda is _____ by ph value.
7. _____ leavening is used to give volume in puff pastry.
8. Pound cake requires _____ leavening.
9. Excess of baking soda results into _____ crumbs.
10. Leavening agents are also known as _____ agent.

B. State whether true or false:

1. Baking powder and baking soda is the same product.
2. Ammonia bicarb can be used in making cakes.
3. Gluten helps to get volume in case of puff pastry.
4. Egg has a natural emulsifier which helps in leavening.
5. Water vapour is helpful in giving volume to the product.

C. Questions:

1. Name the different leavening agents.
2. Differentiate between baking powder and baking soda
3. Define creaming method.
4. What is biological leavening?
5. List the chemical leavening agents.
6. What reaction takes place while using the baking powder?
7. What are the acid ingredients used in the preparation of baking powder?
8. How yeast helps in giving volume to the bakery product?

Chapter–6

UNIT–6: CAKE MAKING METHODS

6.0 UNIT OVERVIEW & DESCRIPTION

Overview:

This unit will provide the student information about the different types of cake making methods.

Knowledge and skill outcomes:

i. Understand the sugar batter method of cake

ii. Know about flour batter method

iii. Know about sponge method

iv. All in one process

Resource Materials:

i. Gisslin, W. *Professional baking.* New York : John Wiley & Sons, c1985.

ii. Sultan, W.J. *Elementary baking.* New York: McGraw-Hill, c1969.

iii. Sultan, W.J. *Practical baking. 5th edition.* New York : Van Nostrand Reinhold, c1990

Learning Outcomes:

UNIT–VI: Cake Making Methods	
6.1 Introduction to Cake Making Methods	❀ General Overview
6.2 Sugar Batter Method	❀ Finding the method and application of this method.

6.3 Flour Batter Method	❀ Making the students aware of this method and application of it.
6.4 Genoise/Sponge Method	❀ Knowing about the method and application of it in cakes
6.5 All in One Method	❀ To differentiate between the different method and application of these methods.

Assessment Plan: (For the Teachers)

6.1	Introduction to Cake Making Methods	Question & Answer		
6.2	Sugar Batter Method	Question & Answer		
6.3	Flour Batter Method	Question & Answer		
6.4	Genoise/Sponge Method	Question & Answer		
6.5	All in One Method	Question & Answer		

6.1 INTRODUCTION TO CAKE MAKING METHODS

Introduction:

There are four basic methods of baking cakes which we will study in the Unit . These are

- ❀ Sugar Batter Method
- ❀ Flour Batter Method
- ❀ Genoise/ Sponge Method
- ❀ All in one Method

6.2 SUGAR BATTER METHOD

The fat and sugar are creamed at medium speed of mixer until fluffy and light in colour. During this stage, small air cells are formed which are entrapped into the creamed mixture. This mixture takes on volume and becomes lighter in consistency. The exact time for proper creaming at this stage is will depend on several factors

1. Temperature of the fat
2. The speed of the mixing machine - High speed will create friction and tends to destroy the number of air cells that are formed and incorporated during the early stages of mixing.

During the second stage the eggs are added one at a time, with a good creaming between each addition. It is the yolk of the egg that contains fat which coats the surface of the cells formed during

creaming and allows the cells to expand and hold the liquid added without curdling. It is, in fact, possible to add the egg in a steady stream, providing the correct temperature is used to supply enough energy to maintain the emulsion.

When all the eggs have been creamed well in the mixture to form the batter at this stage, any required flavouring material like vanilla essence; pineapple essence etc. may be added.

In the final stages of the creaming method of mixing, the flour is added alternatively with the liquid, in small portions, at low mixer speed. This procedure allows the flour to absorb some of the liquid and prevents curdling. The mixed batter should be smooth.

The optimum temperature for all the ingredients is 21ºC(70ºF)

Exercise:

A. Visit a retail shop or departmental store and identify the different types of cake and try to find out the method used in making them and label them in the notebook.

- Submit the assignment to your teacher for evaluation.

Review Questions:

A. Fill in the blanks:

1. The optimum temperature required for all the ingredients is _____ for sugar batter method.
2. Sugar and _____ needs to be creamed first in sugar batter method.
3. _____ needs to be added at the second stage in the sugar batter method.
4. Flour should always be _____ at the end stage.

B. State whether true or false:

1. All the eggs should be added in the first stage of cake making.
2. In sugar batter method, flour and fat needs to be creamed together.
3. Oil is the best ingredient required for creaming.
4. A little flour, if added in the creaming can avoid the curdling.
5. If liquid is required, it should be added with the eggs.

C. Questions:

1. Define the sugar batter method.
2. Write down the steps need to be followed in the sugar batter method.
3. What are the precautions required in the sugar batter method?
4. Which type of fat is suitable for the sugar batter method?

6.3 FLOUR BATTER METHOD

This method is used primarily in the production of high-ratio type cakes. The cake made by this method, although lacking in volume, are usually moist, tender, of fine grain and have excellent keeping qualities of shelf-life.

The first step is blending of flour and shortening until the flour particles are thoroughly coated with fat. This is followed by the addition of the dry ingredients and about 35% of the required liquid, including eggs. The whole mixture is mixed for a pre-determined period. Lastly, the remainder of the liquid is added and mixing is continued until the batter is smooth.

The mixed batter should be deposited into cake pans and baked without delay. It must be kept in mind that once the leavening agents have been added to the batter, they begin to react and evolve carbon dioxide gas.

In a fluid batter, this gas tends to rise upwards, the tiny bubbles coalescing as they come in contact with each other to form larger cell with greater buoyancy. It should be noted that there is an inevitable escape of gas from the batter as well as a coarsening of the cell structure if a mixed batter is left too long out of the oven. It is, therefore, a good practice to place panned cake batters into the oven soon after mixing.

The oven temperature at which these cakes should be baked will vary over a considerable range, depending on factors such as richness of the formula, size of pan, and moisture content of the batter. Batters which are high in sugar content require low baking temperatures in the range of 325-350ºF(160-175ºC), while leaner mixtures may be baked at a temperature range of 350-400ºF(175-200ºC).

The average baking time for layer cakes will take 15-20 minutes and for cupcakes 10-15 minutes.

A good cake shows evenly distributed minute (very fine) cells without any large holes.

- Have Good Colour.
- Should Eat Moist.
- Have Good Flavour, and general appearance should be attractive with good eye appeal

Review Questions:

A. Fill in the blanks:

1. The flour batter method is good for the _____ ratio type cakes.
2. Cakes prepared by flour batter method are _____ in volume.

B. State whether true or false:

1. Cakes prepared by the flour batter method will have excellent shelf life.
2. The first step of flour batter method is to blend sugar and flour.

C. Questions:

1. Define the flour batter method.
2. Differentiate between the flour batter method and the sugar batter method.
3. What are the precautions required in the flour batter method?

6.4 GENOISE/SPONGE METHOD

It is a cake made with whole egg, unlike some other sponge cakes in which we have to separate yolks and egg whites, and beaten separately. The whole eggs, and sometimes extra egg yolks, are beaten with the sugar and heated at the same time using double boiler or Bain -Marie . It is done to a stage known as "ribbon stage" when if the batter is allowed to fall; it will fall like a ribbon. A cake made with this method is generally a fairly lean cake, getting most of its fat from egg yolks, but some recipes also add in melted butter or oil before baking.

Exercise:

A. Prepare a chart of the different methods of cake making and put them in individual columns.

- Submit the chart to your teacher for assessment

Review Question:

A. Fill in the blanks:

1. Double boiler can be used for making of cake in _____.
2. Sugar used for cake making should have _____ grains.
3. _____ and _____ needs to be whisked to make the cake.
4. Egg _____ needs to be whisked first for better results.

B. State whether true or false:

1. Poor quality of eggs used gives good quality of cake.
2. Lean cakes are produced by the genoise method.
3. Yolk can be heated on double boiler for better whisking.

C. Questions:

1. Define the sponge/genoise method of making cake.
2. What are the steps followed in making of genoise method cake?

6.5 ALL IN ONE BLENDING METHOD

Mixing Methods for Batter Type Cakes

Cake batter is an emulsion of the oil-in-water type with air bubbles entrapped in the fat phase and the remainder of the ingredients dissolved or dispersed in the water phase. It is generally accepted that the aeration of a cake depends on the entrapment of air in the batter by creaming the shortening

or whipping the eggs and on the expansion of carbon dioxide gas if baking powder is used together with the water vapor pressure within the air bubbles upon heating in an oven.

The successful mixing of a cake is dependent upon:

1. Dispersion of all the ingredients as efficiently as possible.
2. Introduction of air into the mixed
3. Proper distribution of this air throughout the mixture
4. Breaking down of large air cells into finer and finer cells

The application of this method has made great advances in the area of prepared flour mixes. The introduction of emulsified shortenings has further enhanced the use of this mixing procedure, thereby many of the creaming and combination methods of cake making.

In this method, the wire whisk, which is really a combination of many beaters, is used to secure the fastest break-up and incorporation of the ingredients. However, the use of a whisk greatly increases the aeration, and therefore, baking powder should be reduced by about 10% of whatever amount of baking powder is normally used.

Examples: For a batter type cake formula; using a 3-speed mixer.

1st speed	½ minute	To wet ingredients
3rd speed	2 minutes	To get a fast break-up and incorporation of air into the ingredients
2nd speed	2 minutes	To distribute the air increasingly finely throughout the mixture
1st speed	1 minute	To eliminate possible large air pockets and to still finely break down the air cells

Review Questions:

A. Fill in the blanks:

1. Prepared flour mixes are preferred to be made with _____ process.
2. _____ is used for easy creaming operation. (shortening/butter)
3. _____ powder need to be reduced by 10% in all min one process of cake making.

B. Questions:

1. Define the all in one process of making cakes.
2. What steps to be followed in case of all in one process of cake making.

Confectionery

Practical Manual

CLASS-XI

Contents

Practical

Practical - 1

To learn to make Variety of Cakes

- Raw materials used in cakes.
- Understand the making of cakes by different methods
- Observe the mixing process
- Learn to make different types of cakes
- Identification of internal and external faults

Practical - 2

To learn how to make variety of Biscuits and Cookies

- Raw materials used in biscuits and cookies.
- Understand the making of dough for different types of biscuits and cookies
- Observe the creaming process
- Learn to make different varieties and shapes
- Identification of internal and external faults

Practical - 3

To learn how to make Short Crust Pastry

- Raw materials used in making of tarts and pies.
- Understand the making of paste for different types of pies and tarts.
- Observe the baking process
- Learn to make different fillings and coverings.
- Identification of internal and external faults.

Module Objectives

CONFECTIONERY

Practical No.	Practical Name	Hours	Key Learning Objectives
1.	Varieties of Cakes	18	❀ Raw materials used in cakes. ❀ Understand the making of cakes by different methods ❀ Observe the mixing process ❀ Learn to make different types of cakes ❀ Identification of internal and external faults
2.	Varieties of Biscuits and Cookies	20	❀ Raw materials used in biscuits and cookies. ❀ Understand the making of dough for different types of biscuits and cookies ❀ Observe the creaming process ❀ Learn to make different varieties and shapes ❀ Identification of internal and external faults
3.	Short Crust Pastry	18	❀ Raw materials used in making of tarts and pies. ❀ Understand the making of paste for different types of pies and tarts. ❀ Observe the baking process ❀ Learn to make different fillings and coverings. ❀ Identification of internal and external faults

Learning Plan

Practical	Aim	Resources
Practical 1	❀ To learn to make Variety of Cakes	❀ Basic baking by SC Dubey ❀ Professional Baking by Wayne Gislen
Practical 2	❀ To learn how to make variety of Biscuits and Cookies	❀ Basic baking by SC Dubey ❀ Professional Baking by Wayne Gislen
Practical 3	❀ To learn how to make Short crust pastry	❀ Basic baking by SC Dubey

Practical – 1

VARIETY OF CAKES

1.1 VANILLA SPONGE CAKE

Introduction:

Objective: Each student should know how to prepare vanilla sponge cake.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable batter
- Know how to whisk eggs and fold flour
- Demonstrate method of whisking and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in sponge making
- Basic sponge making process

Handouts/material required/equipment & tools:

Paper sheet and pencil, wire whisker, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould, bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	200 gm
2.	Sugar	200 gm
3.	Egg	8 no.
4.	Vanilla essence	5 ml

Part B: Method of preparation

1. Separate egg yolk and egg white in a neat & clean bowl.
2. Whisk egg white to a light and fluffy consistency.
3. Add sugar gradually and keep on whisking.
4. Add yolks and whisk again.
5. At last add vanilla essence and fold flour with very light hand.
6. Put the batter in greased baking mould and bake.

Baking temperature -- 2000 C

Baking Time -- 25 mins

Yield -- 800 gms

Review Questions:

1. List out the ingredients required for making vanilla sponge.
2. Write the method of making the vanilla sponge.
3. Fill in the blanks:-
   i. Folding of flour should be done at the _____ stage of sponge making.
   ii. For the sponge making we need to _____the eggs.
   iii. The suitable temperature for sponge baking is _____,

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

1.2 SWISS ROLL

Introduction:

Objective: Each student should know how to prepare swiss roll.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable batter
- Know how to do whisking and folding of flour
- Demonstrate method of whisking and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in swiss roll making
- Basic swiss roll making process

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser, weighing scale, wire whisker, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould , bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	1 kg
2.	Sugar	650 gm
3.	Egg	25 no
4.	Essence (vanilla)	4 tsp
5.	Milk powder	100 gm
6.	Corn flour (optional)	100 gm
7.	Emulsifier or Gel (or as specified)	0.2 gm 40 gm
8.	Melted shortening or Glycerin	30 gm 1 tsp
9.	Jam or butter	200 gm

Part B: Method of preparation

1. Sieve the baking powder & flour twice. Add any other dry ingredient like corn flour, if formula contains.
2. Break egg into bowl. Keep it on hot water bowl in such a way that water does not touch the bowl.
3. Whisk egg, essence (s) and emulsifier/gel, till thick.
4. Add sugar gradually and continue whisking till sponge acquires thick consistency.
5. Dissolve salt and liquid glucose in water and add to the sponge gradually, if the formula contains.
6. Fold in flour carefully, so as to not loose the aeration.
7. Fold in fat/glycerin carefully. Add hot water, if required for dropping consistency.
8. Place butter paper on Swiss roll tray (i.e. baking tray having 1 cm (1/2") height) and grease. Pour the batter on it & bake.
9. Sprinkle sugar (granules) on butter paper.
10. Baked cake is separated from swiss-roll tray with the help of knife politely. Be careful that the cake does not crack. And place it on butter paper in such a way that the sugar stick on the top.

    Cut the edges and spread jam or butter scotch liquid and roll it. If required, place in refrigerator to set. Decorate with butter scotch/chocolate just like yulelog

Review Questions:

1. List out the ingredients required for making swiss roll.
2. Write the quantities of the ingredients used in making swiss roll.
3. Fill in the blanks:
   i. The baking temperature for swiss roll sheet is_____.
   ii. After shaping the roll it should be put in _____ for setting.
   iii. The swiss roll should be covered with _____,and_____ .

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

1.3 MADIERA CAKE

Introduction:

Objective: Each student should know how to prepare madiera cake.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable batter
- Know how to do creaming and folding of flour
- Demonstrate method of creaming and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in madiera cake making
- Basic cake making process

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould, bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	1 kg
2.	Shortening	700 gm
3.	Sugar	700 gm
4.	Egg	16 no
5.	Baking powder	4 tsp
6.	Milk powder	50 gm
7.	Lemon/orange rind	250 gm

8.	Sugar (granules)	50 gm
9.	Salt	pinch
10.	Water	As required
11.	Glycerin	1 tsp

Part B: Method of preparation

1. Prepare batter by creaming method.
2. Chop about 200 gm peel and add to batter. Remaining peel should be cut into long and thin slice.
3. Pour batter in paper lined moulds and bake.
4. When cake is half baked, it will develop a break on top surface. Put thin slices of peel on the break and complete baking.

Baking temperature -- 1600 C

Baking Time -- 40 mins

Yield -- 3 kg

Review Questions:

1. List out the ingredients required for making madiera cake.
2. Write the method of making the madiera cake.
3. Fill in the blanks:
   i. Method used for the making the madiera cake is_____ .
   ii. Madiera cake is garnished with _____ before baking.
   iii. Madiera cake is the variety of _____cakes.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

1.4 FRUIT CAKE

Introduction:

Objective: Each student should know how to prepare fruit cake.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable batter
- Know how to do creaming and folding of flour
- Demonstrate method of creaming and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in fruit cake making
- Basic cake making process

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould, bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	1 kg
2.	Shortening	800 gm
3.	Sugar	1 kg
4.	Corn flour	100 gm
5.	Egg	20 no.
6.	Baking powder	2 tsp
7.	Essence vanilla	½ tsp
8.	Glycerin	50 gm
9.	Almond	100 gm
10.	Cashewnut	250 gm
11.	Cherry	250 gm
12.	Tutee fruity	250 gm

Part B: Method of preparation

1. Wash the fruit and wipe with dry cloth. Mix with flour.
2. Prepare batter by creaming method. Add caramel, liquid glucose, glycerin etc. and fruit at the last stage of mixing.
3. Place in suitable size cake tin and bake.

Baking temperature -- 1600 C

Baking Time -- 40 mins

Yield -- 4 kg

Review Questions:

1. List out the ingredients required for making fruit cake.
2. Write the method of making the fruit cake.
3. Fill in the blanks:
   i. Baking of the fruit cake should be done at _____ .
   ii. The raising agent in fruit cake is_____ .
   iii. There should be _____ crust colour.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress.

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

1.5 CHOCOLATE SPONGE

Introduction:

Objective: Each student should know how to prepare sponge cake.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable batter
- Know how to whisk eggs and fold flour

- Demonstrate method of whisking and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in sponge making
- Basic sponge making process

Handouts/material required/equipment & tools:

Paper sheet and pencil, wire whisker, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould, bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	150 gms
2.	Coco powder	50 gms
3.	Sugar	200 gms
4.	Egg	8 nos.
5.	Vanilla essence	5 ml

Part B: Method of preparation

Baking temperature -- 2000 C

Baking Time -- 25 mins

Yield -- 800gms

1. Separate egg yolk and egg white in a neat & clean bowl.
2. Whisk egg white to a light and fluffy consistency.
3. Add sugar gradually and keep on whisking.
4. Add yolks and whisk again.
5. At last add vanilla essence and fold flour and coco powder mix with very light hand.
6. Put the batter in greased baking mould and bake.

Review Questions:

1. List out the ingredients required for making chocolate sponge cake.

2. Write the difference between chocolate and vanilla sponge cake.
3. What are the uses of chocolate sponge?
4. Fill in the blanks:-
   I. _____ in the recipe makes the sponge dark in colour.
   ii. The baking temperature of chocolate sponge cake is _____.
   iii. The method used for aerating the sponge is_____.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

1.6 FATLESS SPONGE

Introduction:

Objective: Each student should know how to prepare fatless sponge cake.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable batter
- Know how to whisk eggs and fold flour
- Demonstrate method of whisking and folding

- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in sponge making
- Basic sponge making process

Handouts/material required/equipment & tools:

Paper sheet and pencil, wire whisker, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould, bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	56 gms
2.	Cornflour	40 gms
3.	Sugar	180 gms
4.	Egg	4 nos
5.	Vanilla essence	5 ml
6.	Baking powder	2 gms

Part B: Method of preparation

Baking temperature -- 2000 C

Baking Time -- 25 mins

1. Preheat oven to 165C/fan, 185C, 350-375F. Line 2 X 8 inch sponge tins
2. Seive the flour, baking powder and cornflour together.
3. Seperate eggs and whisk egg whites until stiff.
4. Whisk in sugar.
5. Whish egg yolks and then add them to the whites, whisk altogether.
6. Fold in flour, cornflour and baking powder and divide between the 2 tins.
7. Bake in preheated oven

Review Questions:

1. List out the ingredients required for making fatless sponge cake.

2. Write the difference between chocolate and vanilla sponge cake.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

Practical – 2

BISCUITS AND COOKIES

2.1 MELTING MOMENTS

Introduction:

Objective: Each student should know how to prepare cookies.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable dough
- Know how to do creaming and folding of flour
- Demonstrate method of creaming and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in cookie making
- Basic cookie making process

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould, bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	1 kg
2.	Butter	650 gm
3.	Sugar	600 gm
4.	Baking powder	1 tsp

5.	Egg	18o gms
6.	Coconut (dessicated)/corn flakes	300 gms
7.	Essence (vanilla/almond/groundnut)	2 tsp
8.	Salt	1 tsp

Part B: Method of preparation

1. Take butter and sugar and cream well.
2. Sieve flour with baking powder.
3. Add eggs to the creamed mixture one at a time.
4. Do not add the next egg till the first one is creamed completely.
5. Add salt and cream well.
6. Fold the flour mixture and prepare the smooth dough.
7. Divide into walnut size balls and roll into crushed cornflakes.
8. Place on the baking tray and put into preheated oven for baking.

Baking temperature -- 175 deg C

Baking Time -- 20 mins

Yield -- 2.5 kg

Review Questions:

1. List out the ingredients required for making melting moments.
2. Why the name melting moment is given to this product?
3. Differentiate between biscuits and cookies.
4. Fill in the blanks:
   - I. _____ method helps to charge the mixture with air.
   - ii. _____ or _____ can be used for the coating of the melting moments.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

2.2 MACROONS

Introduction:

Objective: Each student should know how to prepare cookies.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable dough
- Know how to do creaming and folding of flour
- Demonstrate method of creaming and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in cookie making
- Basic cookie making process

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould, bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Coconut (desiccated)	1 kg
2.	Sugar	1 kg
3.	Egg white	10 no
4.	Lemon juice or Cream of tarter	¼ tsp
5.	Essence (vanilla)	1 tsp
6.	Essence (as per ingredient)	1 tsp
7.	Salt	Pinch

Part B: Method of preparation

1. Separate the egg white and place in a deep, dry, ceramic dish.
2. Add cream of tarter or lemon juice and allow to whip at peak stage (about 10 to 15 minutes).
3. Whisk it thoroughly.
4. Add sugar gradually and keep on whisking, until the mixture becomes stable enough to stand upright without spreading.
5. Add essence, colour, salt just before the whisking is about to finish.
6. Fold in the coconut very gently so that aeration is not lost and mixture remains stable.

   Made into rock shape, place on baking tray and bake.

Baking temperature --105 deg C

Baking Time -- 60 mins

Yield -- 2 kg

Tips:

- Be careful that, even the small portion of egg (yolk) not get mixed with white, as it makes whisking difficult.
- The whipping dish should be completely dry and free from greasy material i.e. fat/oil/ shortening for proper whisking.

Review Questions:

1. List out the ingredients required for making macaroons.
2. Write the quantities of the ingredients used in making macaroons.
3. Write down the precautions while making macaroons.

4. Fill in the blanks:

   i. The ingredient that helps to give stiffness to the mix is _____ .

   ii. The baking time for macaroons should be_____ pminutes.

   iii. The favorable temperature for macaroon baking is_____.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

2.3 TRI COLOUR BISCUITS

Introduction:

Objective: Each student should know how to prepare biscuits.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable dough
- Know how to do creaming and folding of flour
- Demonstrate method of creaming and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in biscuit making

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould, bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	1 kg
2.	Butter	600 gm
3.	Sugar	600 gm
4.	Baking powder	1 tsp
5.	Egg	180 gms
6.	Essence vanilla	2 tsp
7.	Salt	1 pinch
8.	Butter cream	250 gms
9.	Flavours	As required

Part B: Method of preparation

1. Take butter and sugar and cream well.
2. Sieve flour with baking powder.
3. Add eggs to the creamed mixture one at a time.
4. Do not add the next egg till the first one is creamed completely.
5. Add salt and cream well.
6. Fold the flour mixture and prepare the smooth dough.
7. Roll and cut with the cutte, one with three holes and another as it is.
8. Place on the baking tray and put into preheated oven for baking.
9. After baking prepare three flavours of butter cream and pipe them on the plane cookie and then place the cookie with the hole on it.

Review Questions:

1. List out the ingredients required for making tri colour biscuits.
2. Write the quantities of the ingredients used in making of tri colour biscuits.
3. Fill in the blanks:
   i. Flour should be _____ after the creaming of fat and sugar.
   ii. Applying the three colors can be done _____ baking.
   iii. The baking temperature for tri colour biscuits is_____.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress.

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

2.4 CHOCO CHIP COOKIES

Introduction:

Objective: Each student should know how to prepare cookie.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable dough
- Know how to do creaming and folding of flour

- Demonstrate method of creaming and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in cookie making

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould, bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	1 kg
2.	Shortening	800 gm
3.	Sugar (brown)	650 gm
4.	Baking powder	1 tsp
5.	Baking soda	2 tsp
6.	Egg	9 no.
7.	Essence (vanilla)	1 tsp
8.	Essence (Chocolate)	1 tsp
9.	Salt	1.1/2 tsp
10.	Covering chocolate	1 kg

Part B: Method of preparation

1. Prepare a dough by creaming method.
2. However, mix milk powder, cocoa, corn flour etc. dry powdered with flour before being sieved.
3. Mix liquid glucose, caramel, sugar (granules), sugar (brown) chopped walnut, chopped covering chocolate, etc. (whichever mentioned in formula) into creamed fat. Sugar mixer before flour is being mixed.
4. Break the dough into pieces of walnut size and place on baking tray and bake.

Baking temperature --170 deg C

Baking Time -- 20 mins

Yield -- 3.5 kg

Review Questions:

1. List out the ingredients required for making choco chip cookies.
2. Write the method of making choco chip cookies.
3. What is the use of choco chips in the cookies making ?
4. Fill in the blanks:
   i. Eggs should be added _____ while creaming.
   ii. Vanilla essence is added to hide the flavour of_____ .
   iii. The baking soda and baking powder are _____ingrediants.

2.5 SALTED BISCUITS

Introduction:

Objective: Each student should know how to prepare biscuits.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable dough
- Know how to do creaming and folding of flour
- Demonstrate method of creaming and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in biscuit making

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould, bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	1 kg
2.	Butter	500 gms
3.	Sugar	140 gms
4.	Ammonia bi carbonate	10 gms
5.	Salt	10 gms
6.	Curd/milk	As required
7.	Ajwain	2 tsp

Part B: Method of preparation

1. Prepare a smooth dough as per the rubbing method. However, add ajwain into fat rubbed flour.
2. Sheet the dough to about 1/6" thickness. Prick with fork, cut with biscuit cutter, place on tray
3. apply egg wash or milk wash & bake.

Baking temperature-185 deg C

Baking Time-20 mins

Yield - 1.5 kg

Review Questions:

1. List out the ingredients required for making salted cookies.
2. Write the quantities of the ingredients used in making salted cookies .
3. Fill in the blanks:
   i. The raising agent in salted cookies is _____ .
   ii. Curd helps in _____ giving in the product.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	

Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

2.6 NUT COOKIES

Introduction:

Objective: Each student should know how to prepare cookies.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable dough
- Know how to do creaming and folding of flour
- Demonstrate method of creaming and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in cookie making

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould , bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	1 kg
2.	Shortening	600 gm

3.	Sugar	500 gm
4.	Egg	4 no
5.	Baking powder	1.1/4 tsp
6.	Essence (vanilla)	2 tsp
7.	Groundnut	200 gm

Part B: Method of preparation

1. Prepare the dough by creaming method. However, mix the roasted, shelled, finely crushed groundnut with flour.
2. Made the dough into diagonal place in refrigerator till sets properly about 1 hr.
3. Slice with sharp knife into biscuit thickness (i.e. about 5 mm (1/6")).
4. Apply egg or milk wash.
5. Place on tray & bake.

Baking temperature --170 deg C

Baking Time -- 25 mins

Yield -- 2.3 kg

Review Questions:

1. List out the ingredients required for making nut cookies.
2. Write the quantities of the ingredients used in making nut cookies.
3. Fill in the blanks:
   - I. _____ nut is used in making of nut cookies.
   - ii. The baking temperature for the nut cookies is _____.
   - iii. The dough needs to be _____ before cutting.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

2.7 BACHELOR BUTTONS

Introduction:

Objective: Each student should know how to prepare cookies.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable dough
- Know how to do creaming and folding of flour
- Demonstrate method of creaming and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in cookie making

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould, bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	1 kg
2.	Shortening	700 gm
3.	Sugar	400 gm
4.	Egg	8 no
5.	Baking powder	1 tsp
6.	Essence (vanilla)	2 tsp
7.	Milk/water	As required

Part B: Method of preparation

1. Prepare the pipeable dough by creaming method.
2. Place a big star nozzle in a icing bag. Fill with dough and pipe out to button shape directly on baking tray.
3. Decorate with small drop of jam in the centre of the biscuit & bake.

Tips:

1. Wet the icing bag with water before filling dough so that shortening does not leak out from bag.

Baking temperature -160 deg C

Baking Time --20 mins

Yield -- 2.5 kg

Review Questions:

1. List out the ingredients required for making bachelor buttons.
2. Write the quantities of the ingredients used in making bachelor buttons.
3. Fill in the blanks:
   i. Salt is used to _____ the flavour.
   ii. The ideal shape of bachelor buttons should be _____ shape.
   iii. The favorable time for the baking of bachelor buttons is _____.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

2.8 NAAN KHATAI

Introduction:

Objective: Each student should know how to prepare cookies.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable dough
- Know how to do creaming and folding of flour

- Demonstrate method of creaming and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in cookie making

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould, bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	1 kg
2.	Shortening	650 gm
3.	Sugar	650 gm
4.	baking soda	1 tsp
5.	Ammonia bi carbonate	1 tsp
6.	Curd	30gms
7.	Cardamom (powder)	1 tsp
8.	Nutmeg (powder)	2 tsp

Part B: Method of preparation

1. Prepare dough by creaming process.
2. Break the dough into small even size pieces of required size round each piece.
3. Place in baking tray 1 cm apart, press gently
4. Rest the balls for 1 hr and bake.

Baking temperature --145 deg C

Baking Time -- 25 mins

Yield -- 2 kg

Tips:

1. Garnish the nankhatai ball-top with pista flakes, almond etc.

Review Questions:

1. List out the ingredients required for making naan khatai.
2. Write the method for making the naan khatai.
3. how the naan khatai has hollow space in center.
4. Fill in the blanks:
   i. Ammonia is a _____ leavening agent.
   ii. The ideal ingredient for flavoring the naan khatai is _____.
   iii. The favorable time for the baking of naan khatai is_____.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

2.9 BUTTER COOKIES

Introduction:

Objective: Each student should know how to prepare cookies.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable dough
- Know how to do creaming and folding of flour
- Demonstrate method of creaming and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in cookie making

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser , weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould , bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	1 .3kg
2.	Butter	500 gms
3.	Sugar	500 gm
4.	Egg	6 nos
5.	Salt	3tsp
6.	Vanilla essence	5 ml

Part B: Method of preparation

1. In a large bowl, cream together the butter and white sugar until light and fluffy. Beat in the egg, then stir in the vanilla.

2. Combine the flour and salt; stir into the sugar mixture. Cover dough, and chill for at least one hour.
3. Chill cookie sheets.
4. Preheat oven to 400 degrees F (200 degrees C). Press dough out onto ungreased, chilled cookie sheets.
5. Bake for 8 to 10 minutes in the preheated oven, or until lightly golden at the edges.
6. Remove from cookie sheets to cool on wire racks

Baking temperature -- 200 deg C

Baking Time --10 mins

Yield -- 2 kg

Review Questions:

1. List out the ingredients required for making butter cookies.
2. Write the method for making the butter cookies.
3. What is the role of butter in these cookies?

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

2.10 LAUNGE- DE -CHATS

Introduction:

Objective: Each student should know how to prepare biscuits.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable batter
- Know how to do whisking and folding of flour
- Demonstrate method of whisking and folding
- Know and understand the baking process

Pre-learning required:

- Role of each ingredient in biscuit making

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, pastry brush, working table, cake mould , bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	250 gms
2.	Butter	250 gms
3.	Icing Sugar	250 gms
4.	Salt	2 pinch
5.	Eggs	6 nos large
6.	Vanilla extract	2 tsp

Part B: Method of preparation

1. Preheat the oven to 180C and line two baking trays with baking parchment.
2. Put the butter and icing sugar into a bowl and beat using an electric hand whisk until pale and smooth. Beat in the flour, one half at a time. Add the salt and vanilla extract and then beat in the egg whites.
3. Spoon the mixture into a piping bag fitted with a 1cm/½in round nozzle and pipe straight lines of the mixture, about 8cm/3in long, onto the paper. Leave 5cm/2in between each biscuit as they will spread during cooking.

4. dry in cold oven after baking

Baking temperature --180 deg C

Baking Time -- 12 mins

Review Questions:

1. List out the ingredients required for making Launge- de -chats.
2. Write the method of making Launge- de -chats.
3. What is the use of Launge-de-chats?
4. Fill in the blanks:
   i. Eggs should be added _____ the flour.
   ii. Vanilla essence is added to hide the flavour of _____.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

Practical – 3

SHORT CRUST PASTRY

3.1 JAM TARTS/LEMON CURD TARTS

Introduction:

Objective: Each student should know how to prepare tarts.

Resource Material:

- Basic Baking by S C Dubey

Delivery Schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable paste for tart.
- Know how to do rubbing and folding of flour
- Demonstrate method of rubbing and folding
- Know and understand the baking process
- Know and understand the decoration of tarts

Pre-learning required:

- Role of each ingredient in tart making

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, tart moulds, pastry brush, working table, bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	1 kg
2.	Shortening	500 gm
3.	Sugar	250 gm
4.	Baking powder	2 tsp

5.	Salt	Pinch
6.	Cold water	As required
7.	Part two	
8.	Lemon curd /jam	1.5 kg

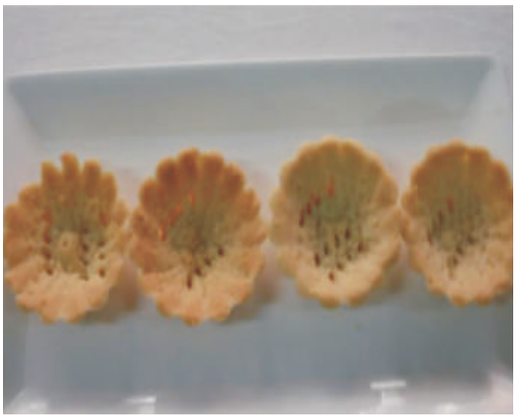
Part B: Method of preparation

1. Prepare dough (from part-1) by using rubbing method. Sheet it to 4 mm (1/6") thickness.
2. Cut the dough pieces by pressing top of mould. Set each piece in mould by pressing with finger, prick with fork. Place on tray and bake.
3. Take out the baked dough from mould. Allow to cool and piped out with lemon curd/ jam.

Baking temperature -- 175 deg C

Baking Time -- 20 mins

Yield -- 40 nos (80 gms each)



Review Questions:

1. List out the ingredients required for making lemon curd tarts.
2. What is known as blind bake and why it is done ?
3. Fill in the blanks:
   i. Lemon curd tarts are filled _____ baking.
   ii. Tart should be _____ from the top.
   iii. _____ method is used for the making of tart shells.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

3.2 APPLE PIE

Introduction:

Objective: Each student should know how to prepare pie.

Resource Material:

- Basic Baking by S C Dubey

Delivery Schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable paste for pie.
- Know how to do rubbing and folding of flour
- Demonstrate method of rubbing and folding
- Know and understand the baking process
- Know and understand the decoration of tarts

Pre-learning required:

- Role of each ingredient in tart making

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser , weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, ,pie moulds, pastry brush, working table, , bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	1 kg
2.	Shortening	500 gm
3.	Sugar	100 gm
4.	Baking powder	2 tsp
5.	Salt	Pinch
6.	Cold water	As required
	Part two	
1.	Sugar	250 gm
2.	Corn flour	100 gm
3.	Salt	Pinch
4.	Apple	1 kg
5.	Cinnamon (powder)	2 tsp
6.	Nutmeg (powder)	2 tsp

Part B: Method of preparation

1. Prepare smooth dough by rubbing method. Roll out into 5 mm (1/6") thickness and used as a base for pie dish.
2. Remove peel and core apples and cut into medium size pieces. Add half of the sugar and heat on slow fire till the aplle gets slightly softened.
3. Take off the fire. Mix remaining sugar, corn flour, salt and spices together and add to apples stirring very gently so as not to mesh the softened apple.
4. Arrange the apple mixture loosely on to the pastry lined pie dish. Dot with butter.
5. Cover with sheeted pastry dough, dock with fork, apply egg wash & bake.

Baking temperature -- 175 deg C

Baking Time -- 35 mins

Yield -- 2 kg

Review Questions:

1. List out the ingredients required for making apple pie..
2. Write the quantities of the ingredients used in making apple pir for four people.
3. How will you differentiate between tart and pie?
4. Fill in the blanks:
   i. _____ crumbs should be added to the mix for moisture absorbing.
   ii. _____ are the nut added in apple pie .
   iii. _____ is the sweet spice preffered for the apple pie.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

3.3 BAKEWELL TART

Introduction:

Objective: Each student should know how to prepare tart.

Resource Material:

- Basic Baking by S C Dubey

Delivery schedule:

Student expectations/learning objective:

- Understand the ingredients
- To prepare a soft pliable paste fortart.
- Know how to do rubbing and folding of flour
- Demonstrate method of rubbing and folding
- Know and understand the baking process
- Know and understand the decoration of tarts

Pre-learning required:

- Role of each ingredient in tart making

Handouts/material required/equipment & tools:

Paper sheet and pencil, eraser, weighing scale, sieve, measuring jar, measuring spoons steel bowl, scrapper, kitchen cloth, baking tray, ,pie moulds, pastry brush, working table, , bakery oven.

Procedure/methodology:

The student should observe and report the following;

Part A: Raw Materials

Sr. No.	Ingredients	Actual wt.
1.	Flour	250Gms
2.	Shortening	150gms
3.	Sugar	50gms
4.	Egg yolk	2 nos
5.	Egg white	2 nos
	Part two (filling)	
1.	Sugar	250 gm

2.	Raspberry/strawberry jam	100 gm
3.	Eggs	3 nos
4.	Cashewnuts	250gms
5.	Lemon zest	1 tbsp

Part B: Method of preparation

1. To make the pastry,mix the flour, butter and sugar into a food processor with a pinch of salt, until the mixture resembles breadcrumbs. Add the egg yolk and 1 tsp of cold water and mix until the dough comes together. Flatten into a disc, cover with clingfilm and chill for no more than 1 hour. n Roll out the pastry on a lightly floured surface to about 3mm thickness. Line a 20cm tart tin with a depth of 31/2 cm. Prick the base with a fork and chill for 20 minutes. Heat the oven to 180C.
2. Line the pastry case with baking parchment and Cook for about 20 minutes until the pastry is a pale golden colour. Take out the beans, brush the inside of the pastry case with a little egg white and cook for a further 2 minutes. Cool slightly.
3. Spread the jam in an even layer over the base of the pastry case. Cream together the butter and caster sugar. Gradually add the beaten eggs and egg yolk. Fold in the ground cashewnuts and lemon zest. Carefully spoon the mixture over the jam and spread level. Bake for 20 minutes.
4. Cool to room temperature, dust with icing sugar and serve with pouring cream or custard.

Baking temperature --175 deg C

Baking Time -- 35 mins

Yield -- 1 kg

Review Questions:

1. List out the ingredients required for making bakewell tart.
2. Write the quantities of the ingredients used in making bakewell tart for four people.
3. How will you differentiate between tart and pie?
4. Fill in the blanks:
   i. Baking _____ the filling is known as blind bake.
   ii. _____ are the nut added in bakewell tart.
   iii. _____ is the jam preferred in bakewell tart.

Individual assessment:

We recognize that students have different learning styles and needs. The following will help students to assess their progress

Self-Assessment/Learning Plan:

Learning objective	Outcome	Yes/No
Equipment usage	Operation and Use of equipment	
Raw materials used	Must know proportion and composition of raw materials	
Preparation process	Knowledge of the preparation process	
Faults in bread making	Must understand causes and remedies of the faults in bread making	

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