

Subject : Confectionery

Standard XI

Bakery  
&  
Confectionary

Syllabus & Instructional  
Material

# Syllabus

## Unit – I

1. Cake Making Ingredients 5 marks
  - Essential – flour, sugar, fat, egg.
  - Optional – baking powder, milk, fruits.
  
2. Confectionery flour 5 marks
  - Types – whole wheat flour, all purpose Flour, self raising flour, corn Flour, pastry flour, special Cake flour, functions
  
  - functions

## Unit – II

3. Confectionery sugar 5 marks
  - Types – Grain, castor, Molasses, brown Sugar, liquid glucose, saccharin
  - function.
  
4. Baking Fats 5 marks
  - Types – Butter, Margarine, Lard
  - Functions.

## Unit – III

5. Leavening Agents 5 marks
  - Types – Physical, Chemical, Biological.
  - Role of yeast in Bread making.
  
6. Moistening Agents 5 marks
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  - Types – Fresh, Skimmed, dried, milk powder, Condensed milk, cream.
  
  - Functions

## Unit – IV

7. Colours and Flavours 4 marks
  - Colours – Types – natural and Synthetic.
  - Flavours – Natural and synthetic.
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8. Fruits & Nuts. 3 marks  
 Types – glazed, preserves  
 Nuts – Peanuts, Cashew Nuts, Coconut, Almond, walnut, pista
9. Jams, Jellies and setting Agents: 3 marks  
 Manufacturing process of jam, sheet test,  
 Jelly  
 Setting agents and their manufacturing processes:- gelatin  
 Marine gums- agar- agar, alginate, irish moss,  
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### Unit – V

10. Cake making process 4marks  
 A) process – serving, creaming, whipping, beating, folding,  
 maintaining, consistency, panning, make-up, baking
- B) Cake making methods.  
 Types – Sugar-batter method, flour-batter method,  
 blending method, boiled, sugar-water, All in one process.
11. Baking of cakes. 2 marks  
 Tins – preparation, temperature, baking tins, size, of richness of  
 formula.  
 Baking – Increase in volume, crust colour, setting of structure.
12. Characteristics of Cakes. 4 marks  
 A. External characteristics.  
 - Volume, colour of crust, symmetry of form,  
 Character of crust.
- B Internal Characteristics.  
 - Grain, colour of crust, Aroma, Taste, Texture.

### Reference Books

- 1) Basic baking - S. C. Dubey.
- 2) Modern Cookery - Thangam Philip  
 ( Vol. II)
- 3) Understanding Baking. - Amendol

# 1. CAKE MAKING INGREDIENTS

Cake making ingredients are classified as

- 1) Essential ingredients – i.e. flour, sugar, shortening & eggs.
- 2) Optional ingredients – i.e. baking powder, milk, fruits etc.

Above ingredients are also classified according to the function they perform.

- |                        |   |                           |
|------------------------|---|---------------------------|
| a) Structures builders | - | Flour, eggs, milk         |
| b) Tenderizer          | - | fat, sugar, baking powder |
| c) Moistener           | - | Milk, egg.                |

**FLOUR :** Builds structure and holds other ingredients together. Flour for cake making should have a protein content of 8 – 9% and the protein should be of a soft nature. Cake flours are bleached to a greater degree in order to brighten its colour. Medium type flour is used for making small queen cakes and madeira cakes. For rich cakes a combination of medium and soft flour gives good results. When water or any other liquid is added to flour, the proteins glutenin and gliadin hydrate. When swollen particles come into contact with each other, a mass called gluten is formed, which enables the flour and liquid to form a dough. The volume, texture and appearance of the product is due to this reaction.

**SUGAR:** Sucrose is the most commonly used sweetening agent in cake making. Due to the tendering action on flour proteins, it makes the cake tender. The golden brown crust colour of cakes is due to the caramelisation of sugar. Which ever sugar is used in cake making its granulation is very important. Liquid sugars like invert syrup, corn syrup, molasses, honey etc. can be used in part with powdered sugar.

**FUNCTIONS:-** 1) To sweeten 2) to tenderize 3) to raise coagulation temperature of egg protein and therefore raise the volume 4) the crumb becomes fine and more tender. The appealing golden brown colour which develops is due to Maillards reaction and partly due to caramelisation of sugar due to the dry heat of oven. Sugar is hydroscopic by nature (high affinity for water)

**SHORTENING:** Fat used in cake making should be plastic in nature which could incorporate and hold minute air cells during creaming operation. Fats have a tenderizing action on flour proteins and make the cake tender. As a moisture retainer, fat helps the cakes to remain moist and thus improves the shelf life of cakes. Too hard or too soft fat should not be used.

**EGG-** Provides structure to the cake. The eggs provide moisture to the cake. Lecithin present in egg yolk acts as an emulsifier and Lecithin also found in yolk imparts colour to the cake. Egg improves texture, flavour and nutritional value.

**MILK:** Provides moisture in cakes. Milk enriches the cakes nutritionally. Lactose sugar present in milk improves the crust colour and moisture retention capacity of cakes. Milk imparts flavour and taste. Milk protein has a binding action on flour proteins.

**WATER:** Water added as such or in the form of liquid milk hydrates flour proteins forming gluten, which build up the structure of cake. Water regulates the consistency of batter, which affects the volume and texture of cakes.

**Leavening agents:**

Leavening action in cakes is achieved by 3 means.

- 1) Mechanical aeration – eg. Whipping, creaming
- 2) Chemical aeration – eg. Baking powders
- 3) Vapour pressure – eg. Water – steam during baking.

Only chemical aeration / vapour pressure together will not have complete leavening action, mechanical aeration is very necessary. Rich cakes which contain less baking powder call for use of egg white because egg whites have better whipping property. Baking powder is a combination of sodium bicarbonate and acid salt which when moistened and heated evolve  $\text{CO}_2$  gas, which leaven the product.

**FLAVOURING AGENTS**

Is a very important aspect of a quality product. A pleasant flavour is usually indicative of good taste, as these 2 characteristics are co-related. While selecting a flavouring agent, the baker should ascertain that its effect is not impaired either by heat during baking or during normal storage period. Flavouring agent should always be measured carefully.

E.g. Butter, chocolate, Cocoa etc.

## 2. CONFECTIONERY FLOURS

### Types

#### 1) Whole wheat Flour

Is also called entire wheat flour. It is a product prepared from clean wheat in such a manner that the proportion of natural constituent of wheat is not altered. It contains essentially the entire wheat kernel and may be ground to different degrees of fineness. The keeping quality of whole wheat is lower than that of white flour because it contains fat from the germ, which may become oxidized on storage.

#### 2) All purpose flour

Sometimes called family flour or general purpose Flour. White flour is usually made from blends of wheat to produce a protein content that is lower than that developed in dough made from all purpose flour which is strong and elastic than that produced in bread flour doughs.

i) Used for pastries, cookies and certain cakes and rolls. It usually has a very high protein content to make a delicate fine textured cake.

#### 3) Self raising flour.

This has leavening agents and salts added to it in proportions desirable for home baking. Mono calcium phosphate is the acid salt. Most commonly added in combination with sodium bicarbonate (baking soda) as a leavening ingredient.

#### 4) Corn flour

Rich in starch and fat, corn flour has an excellent white colour as compared to other flours. In corn flour, the fat is removed therefore it is 10% starch and when mixed with hot water it forms a gummy mass and is used as a thickening agent in custard.

#### 5) Special Cake Flour

Prepared from soft wheat and is so finely milled that it feels soft and slippery to touch. Forming a fine mass when pressed in the hand, it usually contains most highly refined flour. The protein contents of cake flour are very low as compared to other flours and usually highly bleached with chlorine. The high starch content and weak quality of gluten produced from cake flours make it desirable chiefly for preparation of delicate fine textured cakes.

#### 6) Enriched Flour:

White flour is enriched with nutrients. Each pound of enriched flour contains 2.9 mg Vit. B<sub>1</sub> 1.8 mg Vit. B<sub>2</sub> 24 mg Vit. B<sub>3</sub>, 20 mg iron

**Functions of flour:**

- 1) Flour is a structure builder
- 2) Maida is used for making bread, parathas, used in cakes, pastries and biscuit making.

### 3. CONFECTIONERY SUGARS

#### Types

1) **Grain: i.e. granulated** – There are different grades in these.

- a) Ultra fine – used in desserts and cake mixes.
- b) Very fine – pudding preparation.
- c) Fine – general food and beverage manufacture or table sugar.
- d) Medium coarse – in making fondant.

2) **Castor sugar** – or powdered sugar.

Different grades in it are:

- a) Ultra fine – frostings, icings and uncooked fondant.
- b) Very fine- sprinkling on buns, pies, pastries, biscuit work.
- c) Fine – used in manufacture of lozenges and chewing gums.
- d) Medium coarse – doughnuts.

3) **Molasses** – The best grade of molasses used by the baker is viscous sugary liquor obtained by concentrating the juice of sugar cane. The brown colour and flavour is due to the caramel and other substances derived from the original cane juice. There are various grades depending on degree of refinement. It is used in dark cakes and cookies. In selecting molasses for use in cake making its flavour should be considered.

4) **Brown sugar** - is cane or beet sugar in which the refining process has not been completed. It is also called soft sugar because of its soft feel. Various grades of brown sugar are produced. The flavour and colour is due to the caramel present in the natural sugar syrup before refining. It is used in certain dark cake mixes and icings.

5) **Liquid glucose** or glucose syrup is produced by corn starch. This syrup contains 40% corn sugar and a considerable amount of dextrin. It is used in both cakes and icings and gives a glossy surface in certain types of icings.

6) **Honey** – Honey contains 75% invert Sugar 15% H<sub>2</sub>O. In small amounts, it gives a delicious flavour to cakes and cookies.

7) **Saccharin** – obtained from coal tar and found to be 300 times sweeter than sucrose. It is used in production of soft drinks and in diabetic foods.

### Functions of sugar

- 1) Add sweetness
- 2) Aids in the creaming process.
- 3) Creates in the softening or spreading action of batter.
- 4) Imparts crust colour.
- 5) Aids in the fermentation of yeast.
- 6) Forms body of icings and fillings.

## 4. BAKING FATS

### TYPES :

**1) Butter** – consists chiefly of fat of milk. It is obtained by churning the refined cream of cow's milk. A tough, waxy butter is excellent for making puff pastry, while with softer butter the oil might run out when the pastries are baked. In cake making, the butter is generally creamed. This act of creaming consists of breaking down the butter into an emulsion of water in oil. The reason why butter is superior in flavour to any other fat is due to the presence of volatile fats but one drawback is when butter is kept under unfavorable conditions it becomes rancid (off flavour).

Butter gives to the bakery product a better flavour, an even texture a better bloom and produces light cakes of good appearance. It should be used in the making of high class cakes and lemon cheese curds, butter cream and in toffee making.

Uses- used in cakes, pastries and biscuit making

Margarine – The Oil/fats used in making of margarine are obtained from either animal, vegetable or marine sources.

Made by mixing a variety of fats with stabilizer (lecithin), an oil, soluble dye and a preparation of soured, skimmed milk to supply flavour.

Uses – used in different cakes, pastries etc.

Used in confectionery to replace butter. It creams up well and gives the cakes a good appearance and texture but the flavour and keeping qualities are absent.

Types of vegetable oils used in confectionery are

- 1) Groundnut oil – It is pale yellow in colour and has a distinctive flavour and used for different purposes.
- 2) Olive oil – Used more in bread making

Lard – It is fat separated from the fatty tissue of pigs. The lard is rendered by first mixing the tissues on crushing between rollers and then subjecting to dry heat until the fat runs out of the cells. It is used in confectionery as a shortening agent in the making of short crust pastries, pies, etc. because of its excellent flavour and shortening properties and high melting point.

## **Functions & uses of fats in confectionery**

- 1) **To provide flavour** – If a fat possess flavour like butter / margarine it impacts the cake in which it is incorporated.
- 2) **Influence on keeping qualities** – Fat by its emulsifying action holds the aqueous portion of a cake batter and to prevent the cake from drying out to a certain degree.
- 3) **Shortening power** – It breaks down the gluten in cakes to give a soft texture.
- 4) **Influence on volume** – It helps to increase the volume of baked products due to the presence of air cells which it holds by the process of creaming.

## 5. LEAVENING AGENTS

Leavening agents are substitutes added to food to raise the volume of food. The term leaven comes from the latin word "Levo" means to raise or to make light by aviation. The leavening agents produce carbon dioxide which help to give characteristic structure to breads, biscuits, cakes etc.

Classification of leavening agents

Natural Air, Steam	Biological Yeast	Chemical Baking powder, Sodium bicarbonate, Ammonium Bicarbonate
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### Natural:

#### 1. Air

Is a leavening agent present in all batters & doughs. The effectiveness of CO<sub>2</sub> in leavening depends upon the distribution of air as CO<sub>2</sub> does not form new gas cells in the batter but it diffuses into and expands.

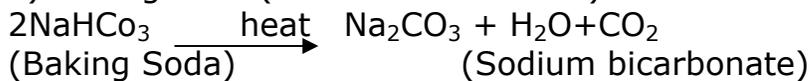
#### 2. Steam:

Like air is an ever present leavening agent. Even a small amount of H<sub>2</sub>O causes an appreciable leavening action. Steam alone cannot leaven a mixture, its action must be combined with that of air or carbon dioxide.

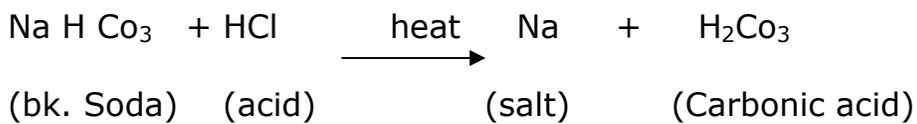
### Chemical leavening Agents.

#### a) Carbonates

a) Baking soda (sodium bicarbonate)



When sodium bi-Carbonate is heated it is broken down into sodium Carbonate or Washing soda, water or CO<sub>2</sub>. This reaction produces sodium carbonate & alkaline salt that has a desirable flavour. If present in excess, its alkalinity changes the flavour pigments of flour to a yellow colour. To avoid this problem, baking soda is combined instead with an acid to produce a more natural residue.



## **b) Ammonium bicarbonate**

When exposed to heat decomposes into volatile Compounds like Ammonium,  $\text{CO}_2$  &  $\text{H}_2\text{O}$ . This leavening agent is suitable for products with low moisture & a large surface area that are baked at high temperature. Because these conditions encourage the ammonia to escape otherwise it will impart a bitter taste to the product.

## **c) Baking Powder**

Are Commercially available as combinations of sodium bicarbonate & acid reacting substance such as salts of tartaric acid, phosphoric acid & aluminium. Baking powder differs on the type of acid they contain.

### **1) Fast Acting baking powder-**

Fast acting baking powder reacts to produce  $\text{CO}_2$  as soon as it is moistened. This occurs because the acid is soluble in cold  $\text{H}_2\text{O}$  thus the gas is liberated during the 1<sup>st</sup> few minutes of contact with the liquid.

### **2) Double acting baking powder –**

This reacts twice –

1) When moistened & then again when heated. This is because the powder contains 2 acid components that is soluble in cold  $\text{H}_2\text{O}$  the other soluble in hot  $\text{H}_2\text{O}$ .

### **3) Slow acting baking powder**

This powder gives very little gas at warm temperature, but releases all the available gas only at a temperature of the oven.

## **Biological leavening Agents**

### **Yeast:-**

Is a unicellular plant that reproduces in the presence of sugar under appropriate conditions of pH 6 and temperature of 30C. During growth & multiplication, the sugar decomposes into alcohol &  $\text{CO}_2$ . These changes take place anaerobically & is known as fermentation

The  $\text{CO}_2$  liberated during fermentation in flour mixture, leavens batter & dough & alcohol produced is driven off during baking process.

### **Advantages of yeast**

- 1) Impart porous & light texture to product.
- 2) Imparts distinctive flavour & taste
- 3) Gas production continues for a longer duration

**Types of yeast** ( yeast is available in 2 forms)-

**1) Dry yeast**

The yeast is grown by proper conditions & when grown is separated by centrifugation & then starch is added after it is compressed. It is dehydrated at 40°C at 8% moisture. The dry materials are ground to get granules. The shelf life of dry yeast is over 2 yrs. It should be stored in air light containers.

**2) Compressed yeast.**

When yeast is grown, the yeast cells are separated from that medium by centrifugation. This yeast is mixed with starch & compressed into cakes. Then it is wrapped in a wax coated paper. It has moisture content of 72%.

**Role of yeast in bread making**

- 1) Yeast raises & conditions the dough or in other words converts the inert heavy mass of dough into a light, porous elastic product.
- 2) Yeast itself adds food value to the loaf.
- 3) Fermentation brought about by the action of the yeast, represents the life process of dough & upon this depends the creation of bread.

**Growth of yeast**

**The ideal conditions for yeast growth are as follows**

- 1) Plenty of water
- 2) The right temperature
- 3) As high as possible concentration of dissolved oxygen.
- 4) A low but constantly maintained concentration of sugar
- 5) A hydrogen ion concentration maintained at about 3.5 to 4.5 by the addition of alkaline or acid nutrients.

## 6. MOISTENING AGENTS

### MILK

Composition of Milk

H <sub>2</sub> O (g)	-	88%
Protein (g)	-	3.3%
Fat (g)	-	3.3%
CHO (g)	-	4.7%
Ash (g)	-	0.7%
Total Solids	-	11-15%
Non – Fat total solids %	-	8-10%

Composition varies depending on various factors, breed, season, stage of location, feed of animal. Fat differs from one animal to another.

**Protein content** – The chief protein of milk is casein. 80% of milk is in the form of casein, remaining is Lacto albumin and lacto globulin. Small amounts of other proteins are present in colloidal form.

Properties of Casein

- 1) It is a phosphoprotein
- 2) It is easily coagulated or precipitated by action of acid / enzyme resin (used in manufacture of cheese)
- 3) Lacto albumin and Lacto globulin are whey proteins.

**Fat Content** – All dairy products have appreciable amounts of milk fat except those which are made from skimmed milk (fat is removed). Fat of milk is made up of short chain saturated fatty acids such as butyric acid, caproic acid. The butter releases an agreeable odour. Because of short chain fatty acids present in milk, butter is soft.

**Carbohydrate content** – Lactose is the chief carbohydrate of milk, because it is only present in milk. It is disaccharides -2 sugar (glucose, galactose). In the intestine on digestion it gives glucose and galactose. The enzyme lactase is produced in small intestine and breaks the lactose into components (glucose & galactose).

**Flavour of milk:** It is mild and slightly sweet because of lactose contents, milk fat. The aroma of fresh milk is produced by organic compounds like ketone, acetaldehyde and short chain fatty acids. Heat processing may affect the flavour of milk.

**Colour.** The white appearance of milk is due to the reflection of light by the dispersed material.

Types:

**I) Fresh**- Milk is the most perishable because it is excellent medium for the growth of bacteria. To obtain good quality of milk, it has to be produced, processed and distributed under sanitary conditions.

The milk processing methods consist of

- 1) Clarification – to remove the dirt milk is passed through centrifugal clarifier.
- 2) Pasteurization – derives its name from Louis Pasteur. It means heating of liquids to high temperature. Pasteurization improves its keeping quality but does not sterilize the milk.

Various methods for Pasteurization

- 1) **Low temperature holding method** – milk is heated at 63°C for 30 minutes.
- 2) **High temperature short time process** – milk is heated at 71°C for 15 seconds.
- 3) **Ultra Pasteurization**- is also called **flash heating**. The temperature used in this method is 138°C for 2 seconds.
- 4) **Homogenisation** – whole pasteurized milk is treated so that its fat globules are broken into small particles. It consists of forcing the milk through a small aperture / hole in a machine called homogenizer under pressure and at 40-68°C in order to break the large fat globules into smaller globules.

## **II) Skimmed milk**

Fat is removed by Centrifugation and what remains behind is skimmed milk. In this fat soluble vitamins are absent.

**III)** Butter milk – similar to skimmed milk

**(IV)** Dried milk powder – H<sub>2</sub>O content is reduced. Done in 2 ways –

- 1) Spray drying.
- 2) Roller / Drum drying.

2 types of powder.

- 1) Skimmed powder – made from fresh pasteurized skimmed milk.
- 2) Whole milk powder – fresh pasteurized whole milk. The product should not contain more than 26% milk fat and not more than 5% moisture.

Milk powder may be subjected to instantizing in order that they instantly dissolve in water. In this milk powder is re-moistened and re-dried.

V) **Condensed Milk** – Made from pasteurized milk that is concentrated and sweetened with 15% sucrose. After concentration, the sugar content increases to 65%. The product is then canned then they need not be sterilized because sugar presence acts as a preservative. This milk generally has 8.5% milk fat, 2.8% milk solid.

VI) **Cream** is milk fat separated from milk, along with some solid by centrifugation. The content of milk cream depends on 1) temperature 2) kind of equipment 3) length of time.

Lower the temperature greater the separation of cream. Longer the time, greater the separation time.

Cream containing various amount of fat are made to meet different requirements

- 1) Whipped cream (30-35% fat)
- 2) Light / coffee cream (18% fat)
- 3) Half-n-half (10.5% fat )

The high % of fat helps to give a more stable foam when cream is whipped.

It is used as toppings for desserts, as a whitener for coffee, in soups, salads etc.

### **Whipping / beating of cream.**

When cream is whipped, air is incorporated and foam is formed. The air bubbles are surrounded by protein film containing the fat particles which are dumped together. This increases the stiffness of the foam and allows more air bubbles to be formed. To cream, the beater and the bowl should be chilled. Therefore it is better to surround the bowl with ice cubes.

## 7. COLOURS & FLAVOURS

### COLOURS

These are added to a large number of food items to make them attractive and affecting the characteristics. Colours of raw food are due to the pigments naturally present. Colours used in food products should be pure and free from all harmful impurities.

#### Colour types.

1) **Natural** – example chlorophyll, caramel, Annatto, turmeric, cochineal, saffron.

Natural colours in vegetables and fruits can be classified on the basis of chemical structure such as chlorophyll (green), Caratenoids (yellow, orange) flavanoids, and anthocyanins (red, blue, purple), anth oxanthins (white, cream and yellow) tannins (brown).

1) **Chlorophyll** – the green colour of leaves is that of chlorophyll which acts as a catalyst in the photosynthesis process.

2) **Caramel** – is officially defined as “The dark brown liquid or solid material resulting from the carefully controlled heat treatment of sugar along with acids and alkalies. It is burning sugars in the presence of a catalyst.

3) **Annatto** – is extracted from the seeds of Bixa arellana. It is a tropical tree.

Uses – used to colour butter, cheese and margarine. The oil soluble form is used for biscuit fillings. The water soluble form is used in baked products giving an egg its yellow shade.

4) **Turmeric** – is obtained from dry roots of turmeric plants.

5) **Cochineal** – used for decorative work giving a pink shade.

6) **Saffron** – It provides a yellow colour and has a distinctive flavour used in biscuit fillings.

#### 2) **Synthetic Colours**

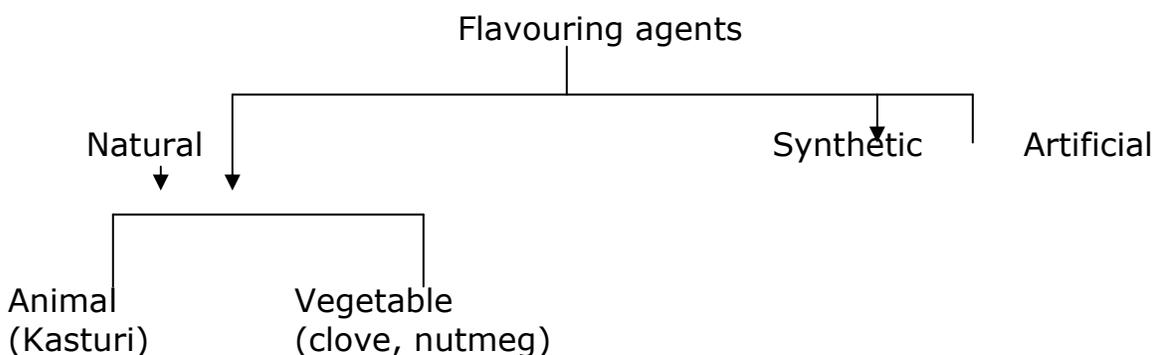
Are used as food colourants. synthetic colours are less expensive than natural ones. They are uniform and extremely potent and remain stable at high temperature, acids and storage. E.g. carmosine, tartrazine, sunset yellow etc. colours are generally available in the form of powder or ready to use solutions. The amount of colour added to any

product should not exceed 0.2 gms. / kg of final product. The acceptance of a food product is determined largely by its appearance.

## Flavours

Flavouring agents are those substances which are used to impart (to give) characteristic flavour to the product to improve its acceptability.

Classification of flavouring agents.



a) **Natural flavours** – Different food stuff such as spices, kasturi have flavouring compounds which give a typical flavour to the food preparation. These natural flavouring compounds are of vegetable and animals origin. However these flavours are present in limited amount in the foods and a very large quantity of the food would be required to extract its natural essence. Natural food flavours are therefore replaced by synthetic flavours.

b) **Synthetic flavours** – The agents responsible for the flavours are esters, aldehydes, ketones, alcohols etc. These substances can be synthesized and substituted for natural flavours typical of synthetic flavour additives are amyl acetate for banana, ethyl butyrate for pineapple. Generally most synthetic flavours are a mixture of different compounds example – Imitation chewing gum flavours contain 15 different esters, alcohol, and aldehydes.

Example of natural flavouring agents – Butter, cocoa, coffee, fruit juices.

Additives – Example spices, essential oil Extracts

Spices – are plants / vegetable substances used to flavour foods. Plant parts are used as spices which include seeds, flower buds (cloves), roots (ginger). Ground spices lose their flavour rapidly, so it is important to have fresh spices always on hand. Because a small amount of spice

usually has a great deal of flavouring power, it is important to weigh spices carefully and accurately.

Extracts – are flavourful oils or other substances diffused in alcohol. Emulsions are flavourful oils with water such as vegetable gums, lemon, and orange are most frequently used emulsions. Their flavour is strong.

## 8. FRUITS AND NUTS

### Types (Fruits)

#### 1) Glaced fruit

Candies are fruits infused with cane sugar or glucose syrup and subsequently drained free of syrup and dried. Bottled candied fruit has 68% syrup and when dry 75% total soluble solid.

Candied fruits have transparent coating of sugar, which imparts them a glossy appearance and hence called glazed fruits.

#### Cane sugar + H<sub>2</sub>O --- boiled.

Outer peel of the fruit is removed, steamed at 113-114°C and then the seeds are removed. Then the syrup is cooled to 93°C till granulated sugar is obtained on the sides. Dried candied fruits are passed through it.

#### 2) Preserves

A mature fruit / its pieces impregnated with heavy sugar syrup till it becomes tender and transparent is known as preserve. It contains 85% total soluble solid.

### NUTS

Nuts are seeded fruits, rich in fat and surrounded by a hard shell. Nuts include cashew nuts, almonds, coconut, groundnuts, walnuts etc.

#### Types of nuts:

- 1) Cashewnuts- are obtained from tropical cashew trees that produce the cashew fruit. Cashew nuts are known for their crunchy and delicious flavour and very commonly used in confectionery preparations.

#### 1) Groundnuts (peanuts)

Groundnuts are consumed in raw, roasted, steamed or fried form due to their flavour and taste. They are also used in confectionery. Groundnut oil is one of the most common oil used in India.

#### 2) Coconut

Available in 2 forms, fresh and dry. The tender coconut contains sweet water and is used as a drink. Fresh coconut is used in sweet preparation such as coconut burfi, laddu etc.

Dry coconut is prepared from matured dry coconut. Mature whole coconuts are allowed to dry in the shade for 10-12 months. During this

period of drying the kernel absorbs the coconut water inside and becomes dry. This gives sweetness to the dry coconut. Coconut is also available in the form of dessicated coconut. The white flesh of mature fresh coconut is shredded, the shredded mass is dried in hot air dryer to a moisture content of 2% and is used in the preparation of cakes, pastries, laddoos etc.

### **3) Almonds**

They are roughly divided into 2, bitter and sweet. Almonds can be used either whole, split, ground according to the recipe. The almonds paste is used to make Marzipan which is used to cover cakes and this keeps it moist.

Average composition of sweet Almonds.

H <sub>2</sub> O	-	6%
Protein	-	24%
Fats	-	54%
CHO	-	10%
Cellulose	-	3%
Mineral Matter	-	3%
Calories	-	2,970

### **4) Walnuts**

Walnuts are used in making walnut cakes and also for gateaux decoration and chocolate confectionery. Walnut oil is obtained from walnuts and used.

The skins of the walnut have a strong taste which is accentuated as the nuts become dry.

### **5) Pistachio nuts**

Cultivated in the Mediterranean region. They are elongated green nuts high in protein and fibre. Used in confectionery recipes mainly as a garnish over cakes and desserts.

## 9. JAMS, JELLIES AND SETTING AGENTS

### **JAMS:-**

#### **Manufacturing process of jam:-**

fruits are graded- Peeled – pulped – addition of sugar – boiling continuously with stirring till thick consistency – addition of citric acid- total solid (68-70%) – filled hot in sterilized bottle – cooled, capped – stored.

#### **Sheet test**

A small portion of jam is taken out during boiling and cooled slightly. It is then allowed to drop. If the jam has set, it will not run off easily, but drips will fall slowly and run together.

### **Jelly:-**

It is a solid product produced by boiling a clear strained solution of pectin containing fruit extracts, free from pulp after the addition of sugar and acid. A perfect jelly is transparent, well set, but not too stiff. It should not be gummy, sticky / syrupy or have crystallized sugar.

### **Setting Agents:-**

#### **1) Gelatin**

Is the principal animal gum. They contain protein and have ability to swell in cold water and dissolve in hot water.

#### **Manufacture**

Obtained from hide trimmings and bones. These are soaked in lime water of high strength – this removes hair, blood etc. – this may take 3 months – the material is washed with H<sub>2</sub>O and treated with (Sulphur Dioxide) SO<sub>2</sub> which removes all lime traces and bleaches it – treated with hot H<sub>2</sub>O many times at 60 to 70°C and last at 100°C in an autoclave. The first extract is good quality gelatin and last is gum.

Properties of Gelatin – 1) Should be pale golden yellow 2) free from odour and flavour of any kind .

Uses: 1) Table jellies 2) fruit gums 3) Stabilization for ice cream 4) Mayonnaise.

#### **(Marine Gum)**

2) Agar – Agar – produced from a sea weed.

#### **Washed and cleaned**

powdered – boiled for 30-40 hrs. then kept to settle down. The top layer is removed for best quality agar – this is poured in trays – cooled –

pressed in a machine to get strips which are dried and bleached in the sun.

Uses - jellies, sweets, Marshmallows

### **3) Alginates**

Obtained from seaweeds, laminaria and macrocystis.

Seaweed- removed - bleached with Hydrochloric Acid - drained - shredded + caustic soda - milled- cold H<sub>2</sub>O added - pulp is dried - clarified - filtered and then bleached with sodium bicarbonate and converted to Sodium Alginate.

### **4) Carrageen (Irish Moss)**

obtained from seaweed called candeus crispus - Irish moss is treated in the same way as agar. It is bleached and dried.

Uses - in Cosmetics, chocolate drinks

### **5) Pectin**

Obtained from fruits. Released from fruits when they are softened during cooking

Uses - in Jams.

To test whether the fruit has enough pectin, certain tests are used.

1) Cook a small portion of the juice with sugar to see it form a jelly.

2) A gel meter.

3) Take a tsp. of juice, cool it, add 3 tsp. of methylated spirit and shake. Leave for 1 min. and transparent jelly will be formed.

## **10. CAKE MAKING PROCESS**

**The cake making process involves different other processes:**

### **1) Sieving**

Is a process of passing dry material through a sieve. It serves to remove lumps to combine materials. If two or more different powders are to be sifted, example flour and baking powder, they should be mixed with half of a spoon first and sifting will become easier.

### **2) Creaming**

Is a process of stirring or beating shortenings with the help of a wooden spoon so that it absorbs air and becomes more workable. Creaming prepares shortenings to mix more readily and thoroughly with other materials.

### **3) Whipping**

Whipping and beating usually mean beating that turns a liquid into a thick fluff. Beating may be done with a spoon, a fork, a whisk or a rotatory beater.

### **4) Folding**

Usually means to stir two or more substances lightly with a spoon, usually with an up and down rather than horizontal motion. A good technique for folding is to tip the bowl about  $\frac{1}{2}$  way towards spilling, hold it firmly with one hand and stir with a large spoon. Make each step follow the bottom/side of the bowl all the way through the mixture at a sloping angle that will make it flow across it. At the end of the stroke raise the spoon, then bring it back to the beginning just above the surface. Rotate the bowl slightly with each stroke.

### **5) Maintaining consistency**

If we cook simply, blend together ingredients until the mixture looks right it is likely to go wrong. This measurement of all ingredients is required to get the correct consistency. Sometimes ingredients can be subtracted or added depending on the mixture, for example – eggless cake. If the mixture is too hard to stir put more milk in it and mix.

### **6) Panning**

Moulds should be lined with grease proof paper or should be greased and dusted with flour. After dusting the mould with flour, it should be turned upside down and tapped gently. Moulds should be filled only  $\frac{2}{3}$ <sup>rd</sup> of its height leaving efficient space for cakes to rise. After the batter is weighed in the moulds it should be leveled properly. Cakes should be loaded in the oven as soon as possible.

## **7) Baking**

Different cakes are baked at different temperatures. Cakes are usually baked in a moderate or moderately hot oven between 350-400°F. The oven should be heated for about 5-10 min before putting the cake tin in it. When oven is not filled to its capacity, it is necessary that the temperature of oven is reduced. Good results are achieved by placing a pot of water in the oven. The water will absorb some of the excessive heat and at the same time the water vapours will delay the process of crust formation on cakes thus allowing the cake to rise evenly and acquire proper volume.

### **Cake Making Methods**

#### **Types**

##### **1) Sugar batter method:-**

In this method all the fat and sugar is creamed together. A combination of fat like hydrogenated shortening, butter or margarine is used. All the fat should be first creamed together, then sugar is added gradually. Then beaten eggs are added gradually little at a time and mixed sufficiently. Milk fruit juices, essences, salt etc. can be added. Flour should not be added all at once. When all the flour is mixed, the remaining liquid is added.

##### **2) Flour batter method:-**

Fat and a quantity of flour are creamed together. Eggs and an equal quantity of sugar is whipped to a stiff paste. This is added to the creamed mixture. At this stage, the remaining sugar is dissolved in milk / water and added to the mixture. Lastly the remaining flour is sifted with baking powder, is added and mixed.

##### **3) Blending method:-**

Emulsified shortening, flour, baking powder and salt are whipped together to a very light and fluffy consistency. Sugar, milk or any other liquid flavours are mixed together and added to the previous mixture. Eggs are added next and the whole mass is mixed to a smooth batter.

##### **4) Boiled method :-**

Butter / Margarine is placed in a bowl and heated till it melts. Remove the bowl from heat and add about 2/3<sup>rd</sup> (or less) flour and mix thoroughly. Eggs and sugar are whisked to a stiff sponge. The sponge is added to the fat –flour mixture. After each addition, the sponge should be mixed thoroughly, remaining flour can be added.

**5) Sugar water method:-**

All the sugar and approximately ½ the quantity (of sugar) of water is agitated in a bowl till it dissolves. Then the remaining ingredients except egg are added and well agitated. Lastly, egg is added.

**6) All in one process:-**

In this process all the ingredients are put into the mixing bowl together. After adding all the ingredients in the bowl, the mixing operation is carried out as follows.

**1) Half a minute at slow speed.**

This is done at slow speed so that all the dry ingredients are moistened without flowing off from the bowl.

**2) 2 minutes at fast speed.**

All the ingredients break up and are incorporated evenly throughout the mass.

**3) 2 minutes at medium speed.**

By mixing at medium speed the larger air cells breaks up into smaller cells and aeration of the mixture becomes even.

**4) One minute at slow speed.**

This is done in order to eliminate any possible large air pockets and still finer breaking down of air cells.

## 11. BAKING OF CAKES

### 1) Tins – Selection and preparation.

There are 4 principle basics of preparing the inside of cake tins and surface of baking sheets.

- 1) Baking sheet / trays as for swiss rolls and biscuits should be greased.
- 2) For such cakes grease the tins and line the base with grease proof paper.
- 3) For cream mixtures line both the sides and the base of the tin with grease proof paper.
- 4) For sponge cakes brush the tin with fat then coat it with equal quantities of flour and castor sugar sifted together.

There are 4 types of pans, round shallow one for layers, lop-sided squares or rectangles, utility or leaf pans, ring or tube pans used for sponge.

### 2) Temperature

550 – 600	-	Pizza baking.
425 - 450	-	Rye breaks
400 – 425	-	white bread rolls, biscuits items.
390	-	cakes, doughnuts
375 – 400	-	various sweet dough, puff, éclairs.
350 – 375	-	sweet rolls, cookies, baked puddings.
250	-	steam at 15 pounds pressure
228	-	steam at 5 pounds pressure.
212(100°C)	-	H <sub>2</sub> O boils at this level.
200	-	Flour and cornstarch are thickened
185 – 195	-	Good for dissolving gelatin
185	-	maximum for custards
150	-	eggs coagulate.

Cakes are usually baked in a moderate or moderately hot oven, between 350 – 400°F. Lean cakes are baked at high temperature. Rich cakes should have a very slow and gradual rise and so baked at low temperature.

### 3) Baking time

Correct baking time depends upon the temperature. Time and temperature work together. Lower temperature requires longer baking time. Higher temperature require lesser baking time.

#### **4) Size and richness of formula**

A well risen cake will have a pleasing appearance with slight convex top surface. A cake should not appear too small / too large for its weight.

Richer the formula lower the temperature of baking.

#### **Baking**

##### **1) Increase in volume-**

It is rather difficult to set standards for volume of cakes which will vary according to different types of cakes. The cakes should not have a pinched appearance and should not appear oven extended too.

##### **2) Crust colour-**

The crust should have a pleasing golden brown colour. Too dark / too light / dull colour is not desirable. Crust must have a uniform colour free from dark streaks or sugar spots or grease spots.

##### **3) Setting of structure –**

Cakes should have symmetrical appearance. Rough harsh, too compact, lumpy or too loose structure is undesirable. Flour builds structure of cake.

## 12. CHARACTERISTICS OF CAKES

The chief characteristics of cakes are as follows:

External	Internal
Volume	Grain
Colour of crust	Colour of Crumb
Symmetry of form	Aroma
Character of Crust	Taste
	Texture.

### External Characteristics

#### 1. Volume

It is rather difficult to set standards for volume of cakes which will vary according to different types of cakes and also according to consumer preference. However, the cakes should not have a pinched appearance and should not appear over extended too. A well risen cake will have a pleasing appearance with slight convex top surface. Although, the relative weight of a particular volume of cake, but a cake should not appear too small or too large for its weight.

#### 2. Colour of crust

The crust should have a pleasing golden brown colour. Too dark or too light or dull colour is not desirable. Crust must have a uniform colour, free from dark streaks or sugar spots or grease spots.

#### 3) Symmetry of form

Cakes should have a symmetrical appearance. Peaking, crack on top surface, low sides, sunken or high centre, burst, caved in bottom or uneven top are undesirable characteristics of cakes.

#### 4) Character of crust

Crust of a good cake should be thin and tendency thick, rubbery, sticky or ever moist, too tender, tough or blistery crust is indicative of poor quality of cakes.

### Internal Characteristics:

#### 1. Grain

The grain is the structure formed by the extended gluten strands including the area they surround. Grain will vary according to the type of cake. However, uniformity of the size of cell and thin cell walls are desirable qualities. Coarseness, thick cell walls, uneven size of cells; large holes and tunnels are indicative of poor grain. Grain should not be too open or too close.

## **2. Colour of Crumb**

Crumb should have a lively uniform colour. It should be free from any streaks or dark patches. Grey, non-uniform, dark, light or dull colour crumb will be undesirable.

## **3. Aroma**

Aroma of a good cake should be pleasant, rich, sweet and natural. It is not desirable to have any foreign aroma i.e. aroma not produced by normal ingredients of cake. Flat, musty, strong or sharp aroma is indicative of poor quality of cake.

## **4. Taste**

Taste of a cake should be pleasant, sweet, and satisfying. Cakes should not leave an after taste in the mouth, should not have a bland taste and should also not have any foreign taste i.e. taste which cannot be acquired by the use of normal ingredients of cake. Use of excessive salt or soda will also adversely affect the taste.

## **5. Texture**

Texture denotes the pliability and smoothness of the crumb as felt by sense of touch. It depends upon the physical conditions of the crumb and type of grain. A good texture is soft and velvety without weakness and should not be crumbly. Rough, harsh, too compact, lumpy or too loose texture is not desirable.

## **Cake faults and their causes**

A cake that does not bear the above characteristics in a correct manner does not meet the required standards of a good cake. When this happens, it is important to identify the faults so that you do not make the same mistake again.

What follows is a list of common cake faults and their causes

### **1. Cakes sunk in the middle**

The most common causes are

1. Too much baking powder
2. Too much sugar
3. Too much fat
4. Cake was moved in the oven before it set

2. White spots on the cake
  1. Too much sugar
  2. Not enough liquid
  3. Sugar too coarse
  4. Cakes kept out for too long before loading in the oven
  
3. Curdled cake batter
  1. The eggs are added too soon
  2. The eggs are added cold
  3. The eggs are added in too large amounts
  
4. Fruit sinking in the cake
  1. The flour is too soft
  2. The batter is too soft
  3. The batter is aerated too much
  4. Fruit is wet and therefore heavy
  
5. Cracks on the top surface of the cake
  1. The oven temperature is too high
  2. Too much baking powder
  3. The batter is over mixed

## GUIDELINES FOR PAPER SETTING

1. Divide the syllabus into five units. Each unit carries ten marks.
2. 40% - knowledge  
40% - understanding  
10% - application  
10% - skills
3. Total number of questions are five. Each question from each unit carrying ten marks each.
4. Each question should have objective-type, small answer-type and big answer-type questions
  1. Weightage for questions  
Objectives - 30%  
Short answer - 40%  
Long answer - 30%
7. Objectives consists of  
Fill in the blank, match the following, name the following, true or false, answer in one ward, choose the correct alternative and complete the statement.
8. Small answer consists of  
One line answer, answer in 2-4 lines or points, or 15-20 wards, or give reasons.
9. Big answer should be in 30-40 wards or diagrams, solving the problems, plan a menu or differentiate.

## DESIGN OF THE QUESTION PAPER [ NEW ]

COURSE: Bakery & Confectionery

STD XI

SUBJECT: Confectionery

TIME: 02 Hrs

MAXIMUM MARKS: 50

The weightage or the distribution of marks over different dimensions of the question paper shall be as follows :

### 1] Weightage to Learning Outcomes

Sr.no.	Learning Outcomes	Marks	Percentage of marks
1 .	Knowledge	<b>20</b>	40 %
2 .	Understanding	<b>20</b>	40%
3 .	Application	<b>05</b>	10 %
4 .	Skill	<b>05</b>	10%
	Total	<b>50</b>	100 %

### 2] Weightage of Content / Subject Units

Sr.no	Units	Marks	Sr.no	Units	Marks	Sr.no	Units	Marks
1	UNIT I	10	3	UNIT III	10	5.	UNIT V	10
2 .	UNIT II	10	4	UNIT IV	10			
							Total :	<b>50</b>

### 3] Weightage to Forms Of Questions

Sr.no.	Form Of Questions	Marks for each question	Number of questions	Total Marks
1 .	Long Answer Type (LA)	04	05	20
2 .	Short Answer Type (SA-II)	03	05	15
3.	Short Answer Type (SA-I)	02	05	10
4 .	Very Short Answer Type (VSA)	01	05	05
	Total :	<b>10 /UNIT</b>	<b>20</b>	<b>50</b>

The expected time for different types of questions would be as follows :

Sr.no.	Form Of Question	Approx. time for each Question ( minute )
1 .	Long Answer Type (LA)	50
2 .	Short Answer Type (SA-II )	40
3 .	Short Answer Type ( SA – I)	20
4 .	Very Short Answer Type (VSA)	10

As the total time is calculated on the basis of the number of questions required to be answered and the length of their anticipated answers, it would , therefore, be advisable for the candidates to budget their time properly by cutting out the superfluous words and be within the expected time limits.

#### 4. Scheme Of Options

There will be no overall choice. However, there is an internal choice in one question of 4marks category in any one Unit.

#### 5. Weightage to Difficulty level of questions :

Sr.No.	Estimate difficulty level of questions	Percentage
1 .	Easy	30 %
2 .	Average	58%
3 .	Difficulty	12%

A question may vary in; difficulty level from individual to individual. As such, the assessment in respect of each question will be made by the paper setter on the basis of general anticipation from the group as a whole taking the examination. This provision is only to make the paper balanced in its weightage, rather than to determine the pattern of marking at any stage.

# BAKERY AND CONFECTIONERY

## MODEL QUESTION PAPER

STD: XI

## SUBJECT: CONFECTIONERY

TIME: 02 HOURS

Maximum Marks: 50

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### INSTRUCTIONS

- [A] Answer question 01 of each unit in 01 or 02 words.
  - [B] Answer question 02 of each unit in 25 - 30 words.
  - [C] Answer question 03 of each unit in 40 - 50 words.
  - [D] Answer question 04 of each unit in 80 - 100 words.
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### UNIT I

- 1. Flour with added leavening agents and salts is called..... {1}
- 2. Give reasons why flour is an essential ingredient in cakes {2}
- 3. List the functions of sugar in a cake {3}
- 4. Explain any 4 of the following flours:- {4}
  - 1. Whole wheat flour
  - 2. All purpose flour
  - 3. Self raising flour
  - 4. Special cake flour
  - 5. Cornflour

### UNIT II

- 1. Saccharin is obtained from..... {1}
- 2. Why is butter preferred in baking? {2}
- 3. List three uses of fat in confectionery {3}
- 4. State any 4 functions of sugar {4}

### UNIT III

- 1. The chief protein in milk is ..... {1}

2. Name the confectionery products in which the following leavening agents are used {2}

1. Ammonium bicarbonate

2. Sodium bicarbonate

3. How are baking powders differentiated on the type of acid they contain ? {3}

4. Define pasteurization and explain about its various methods. {4}

#### UNIT IV

1. Candied fruit having a transparent coating of sugar are called \_\_\_\_\_ fruits. (1)

2. Explain about synthetic flavours (2)

3. What are natural flavours? Explain. (3)

4. Explain the manufacturing process, properties and uses of gelatin. (4)

#### UNIT V

1. The process beating shortenings with a wooden spoon is called \_\_\_\_\_ {1}

2. Explain any sugar-water method of cake making. {2}

3. State any 3 principles of tin selection and preparation {3}

4. Explain any 4 internal characteristics of a cake {4}

#### OR

Explain any 4 cake faults and its causes.